December
1927

Construction Methods

McGraw-Hill Publishing Company, Inc.,
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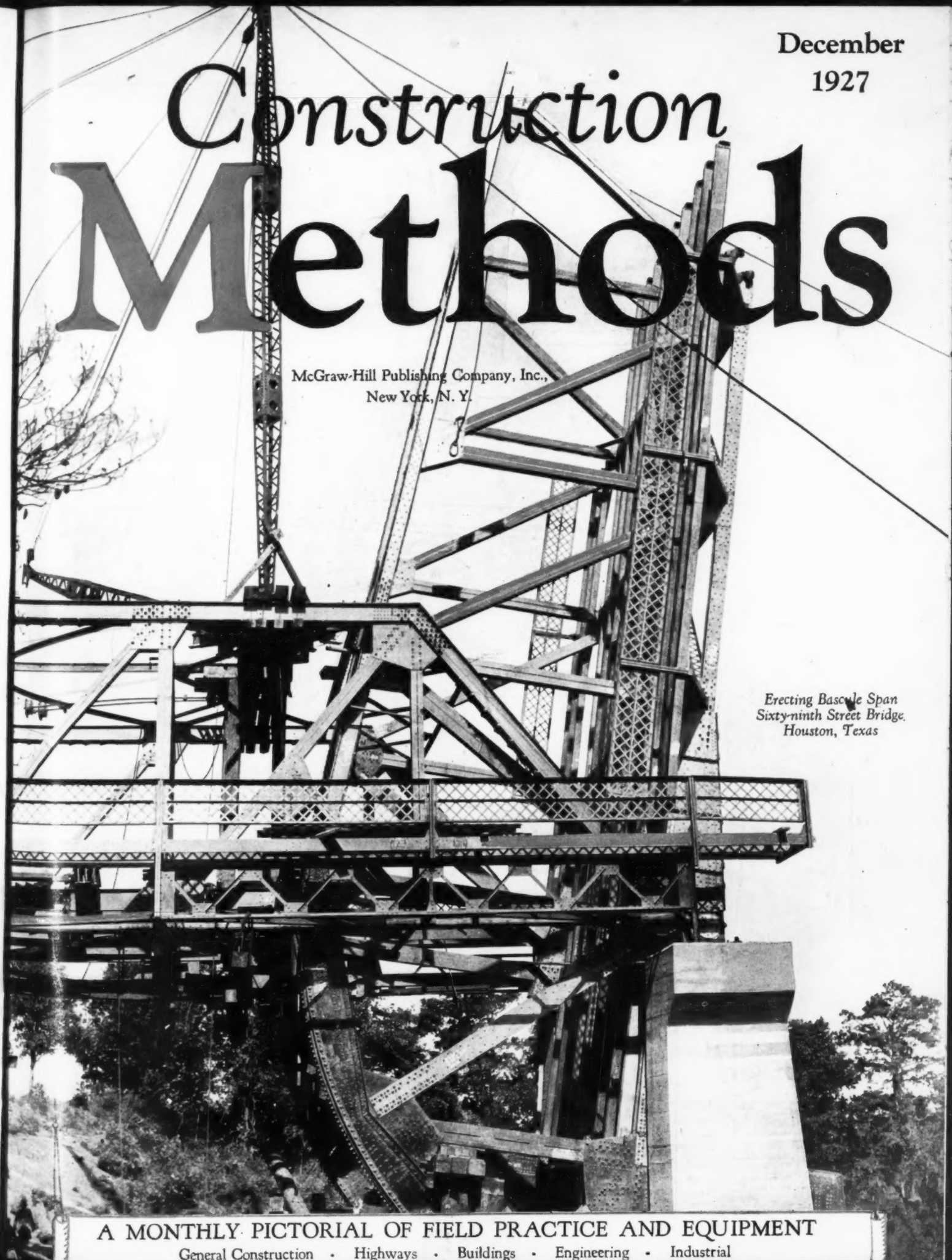

Erecting Bascule Span
Sixty-ninth Street Bridge
Houston, Texas

A MONTHLY PICTORIAL OF FIELD PRACTICE AND EQUIPMENT

General Construction · Highways · Buildings · Engineering · Industrial

An 18-mile link in Florida's Tamiami Trail

Raking out the TEXACO Asphaltic Concrete top on the Tamiami Trail, between Sarasota and Venice, Fla.

One of Florida's most important highway projects of 1927 is about to be opened to traffic just as you read this. It is the section of the well-known and much travelled Tamiami Trail, which links Sarasota and Venice.

An 18-mile highway, 18-feet wide was necessary.

In paving this important section of State highway with TEXACO Asphalt, Florida adds once again to an already impressive yardage of TEXACO Asphalt roads and streets serving the State, its counties and scores of its cities.

A completed section of the 18-mile TEXACO Asphalt link of the Tamiami Trail, Florida.

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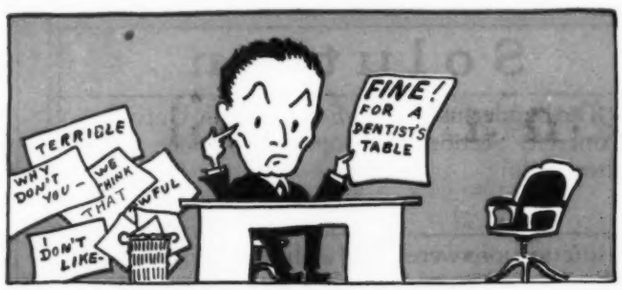
Construction
Methods

Hitting the High Spots

A FEW days ago we were rather contentedly making plans for next year, when in came a letter which forthwith banished our complacent attitude of mind. Strangely enough, it wasn't a fault-finding letter from a dissatisfied subscriber.

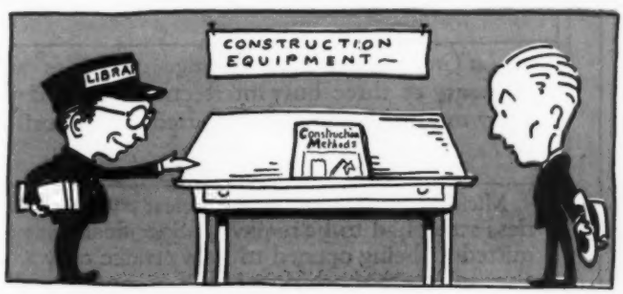


In fact, it was just the opposite. It came from a gentleman who said that he wanted to subscribe to *Construction Methods* because he thought it was a fine magazine. So far, so good. But he went on to say that he was not in the construction business; that he was a dentist and wanted *Construction Methods* so that he could have it on his waiting room table where his patients could enjoy it while waiting for his ministrations.

That, it seems to us, is asking almost too much. We have tried hard to produce a cheerful sort of magazine for construction men, but to expect us

to cheer up people in a dentist's waiting room is an exacting sort of specification. The best we can do is to try, but it really is a trifle out of our line.

WHEN we had finished reading the letter, we decided to undertake an analysis of the last few issues to determine what we had done to deserve our new responsibility. Once started on our analysis, we became thoroughly interested in the job and went over the magazines from cover to cover, including both reading and advertising pages. And in so doing, we discovered, what is probably nothing new to many of our readers, that the advertising pages of *Construction Methods* are rapidly becoming a working catalog of construction equipment and supplies. A rough count showed about eighty separate and distinct items ranging in bulk all the way from massive power shovels to portable acetylene lights which can be carried with one hand. It was a long list that blanketed the field. We have



frequently stated that one of our objects in life is to show to our readers each month a cross-section of the construction industry. The advertisers are doing their share to help us attain that object.

THE January issue will appear at the time of the American Road Builders' Convention and Road Show in Cleveland, so we are going to devote a large part of the space to highway work. Entries in the photographic contest will be restricted to pictures of road jobs, and we feel sure that even those readers who are not directly engaged in the high-

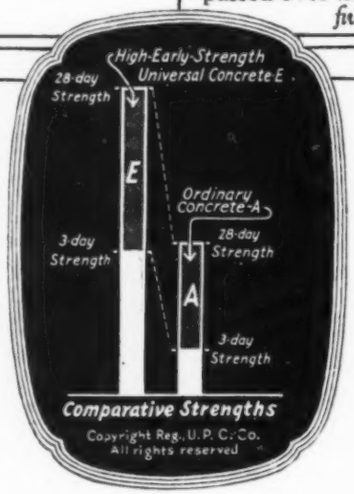
way branch of the industry will find plenty to interest them.

This is the holiday season, and *Construction Methods* extends to every one of its thousands of readers its wishes for a right merry Christmas.

Especially Well Adapted to ROAD and STREET work

While *High-Early-Strength* Universal Concrete may be made as workable as desired and used on *all types* of jobs, the need for time-saving in construction of roads and streets makes it particularly adaptable for this field. Here are typical examples of how *High-Early-Strength* Universal Concrete has helped to prevent or shorten detour periods.

Conditions	Solution
Because *East Stratton Street, Logan, W. Va.,* is used by 5000 automobiles each day, the officials wished to give the public earliest possible use of the new pavement.	The builder used *High-Early-Strength* Universal Concrete. Sections were opened to traffic *3 days* after placing.
At *La Grange Park. Ill.,* a change of grades was necessary at three busy intersections. Each day's delay meant time-loss to hundreds of motorists.	Intersections were paved with *High-Early-Strength* Universal Concrete on *Tuesday* and opened to traffic early *Saturday* morning.
Michigan Street, Duluth's heaviest traveled business street had to be re-paved. Specifications permitted its being opened to heavy traffic only after the concrete had developed a compressive strength of *2000* lbs. per square inch.	*High-Early-Strength* Universal Concrete was used. Thirty-eight tests showed an average strength of *2130 lbs.* at *4 days* when the street was opened. A 10-day detour period was avoided.
Five days before the scheduled opening of the new *Sioux City-Le Mars, Iowa,* highway, paving was begun on the intersection that joins the road to the city.	*High-Early-Strength* Universal Concrete was used for the intersection and it and the highway were opened as scheduled. Three thousand automobiles passed over the intersection on the opening day—*five days* after the concrete was placed.



High-Early-Strength Universal Concrete is made by using fully tested methods with the usual materials, usual labor, usual equipment, and standard—not special—Universal cement. At *3 days* its strength is equal to the strength of ordinary concrete at *28 days*, and in addition it also has a higher *ultimate* strength, and therefore is *permanently* better and stronger concrete. (See diagram.) For details, send in the accompanying coupon.

Name .....

Address .....

UNIVERSAL PORTLAND CEMENT CO.
210 South La Salle Street, Chicago
Without obligation, please send me detailed information on methods of securing strong concrete in *3 days* with the usual materials and equipment.
SM 12-27

Universal Portland Cement Co.

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Concrete for Permanence

Construction Methods

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A Monthly Pictorial of Field Practice and Equipment Illustrating Successful Construction, Maintenance and Material-Handling Methods for General Construction, Highways, Buildings, Industrial Plants and Public Works and Utilities

WILLIAM JABINE, *Editor*

VOLUME 9 | NEW YORK, DECEMBER, 1927 | NUMBER 12

Crane Joins Smoke Eaters

Puts an End to Six Days of Fire Fighting

EVERY now and then construction men and construction machines are called upon for service outside of their own field. Such a call came recently to Bart J. Ruddy of Whitesboro, N. Y., a contractor who has been operating a Universal crane as part of his plant. Three large haystacks and a barn full of hay on a farm near Whitesboro caught fire, and the combined fire departments of three towns, Whitesboro, Yorkville and Utica, worked for six days trying to put the fire out. They succeeded in tying up trolley lines and reducing the water level of the local reservoir until it approached the danger point.

About this time one of the fire chiefs happened to see Mr. Ruddy's crane, which was mounted on a Mack truck, at work digging a trench on a sewer job near the scene of the fire. He called upon Mr. Ruddy for aid, and the crane moved over to the fire and got to work. The piles of smoldering hay were quickly torn to pieces by the clamshell bucket, the fireman standing at attention to extinguish the flames which burst forth as soon as the fire was exposed to the air. The crane loaded the wet hay on wagons which hauled it to nearby lots where it was thinly spread to prevent further smoldering and burning.

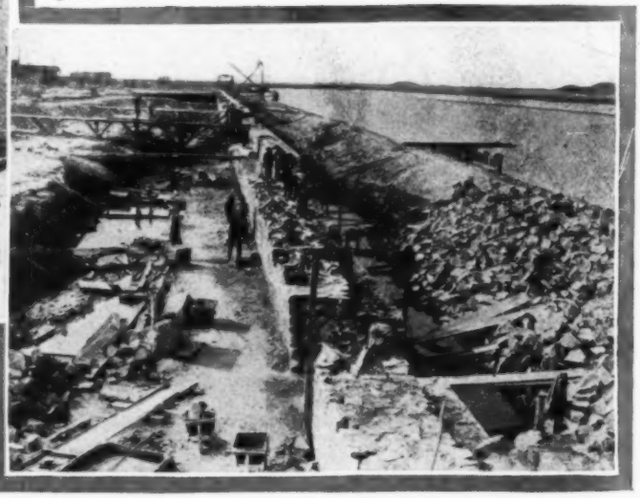
One day of this finished the fire

Cameras Keep Up With

At left—Berlin is solving its housing problem by the construction of buildings like these

Below—Work on the new docks in the harbor of Marghera, south of Venice, a development which is expected to give Italy another port

©Wide World



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©U & U

At left—This great monumental memorial has been built at Ypres by the British government

Below—Unknown French soldiers are entombed in this impressive ossuary at Douaumont

©P & A

Construction News

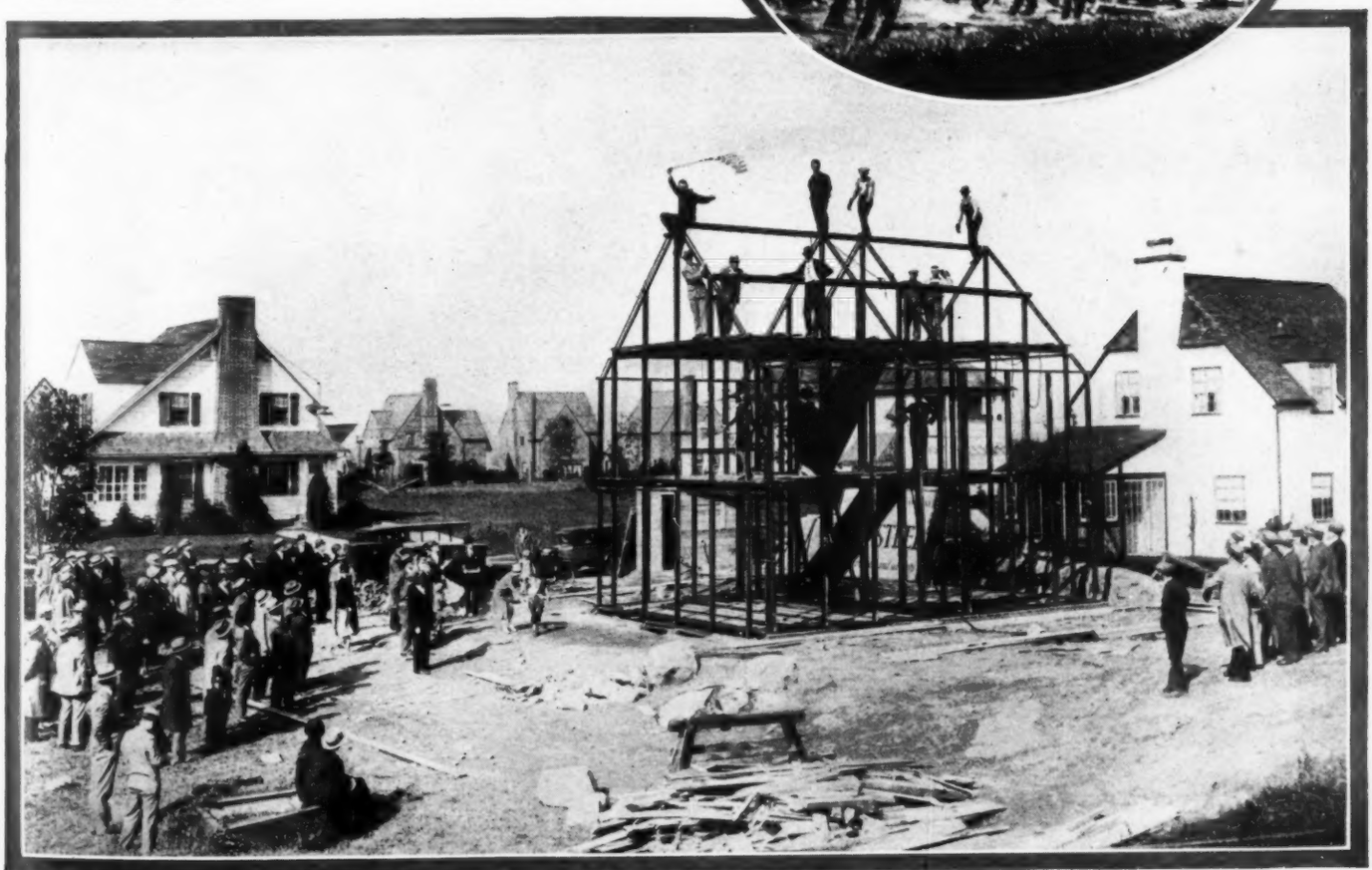
At right—Many miles of snow fence are being put up at this time by the highway departments of the northern states. A pile of fence ready for setting up in northern Wisconsin

Below—Work trains passed through the main street of Barre, Vt., while the fight against the flood was in progress

©International

A steel frame for a six-room house was put up in about three hours at Forest Hills, Long Island

The frame was designed by Robert Tappan. The McClintic-Marshall Company furnished the steel



© International

Big Construction Program Under Way at Wright Field

Experimental Air Station Will Be Largest in the World

SINCE February, 1926, the Air Corps of the War Department has been at work building the largest experimental air station in the world. Already about $2,000,000 has been spent, and $1,500,000 more will be needed to bring the project to completion. If the necessary appropriation is made by the next Congress, the field will be completed by January, 1929. The station will be used for heavier-than-air craft only.

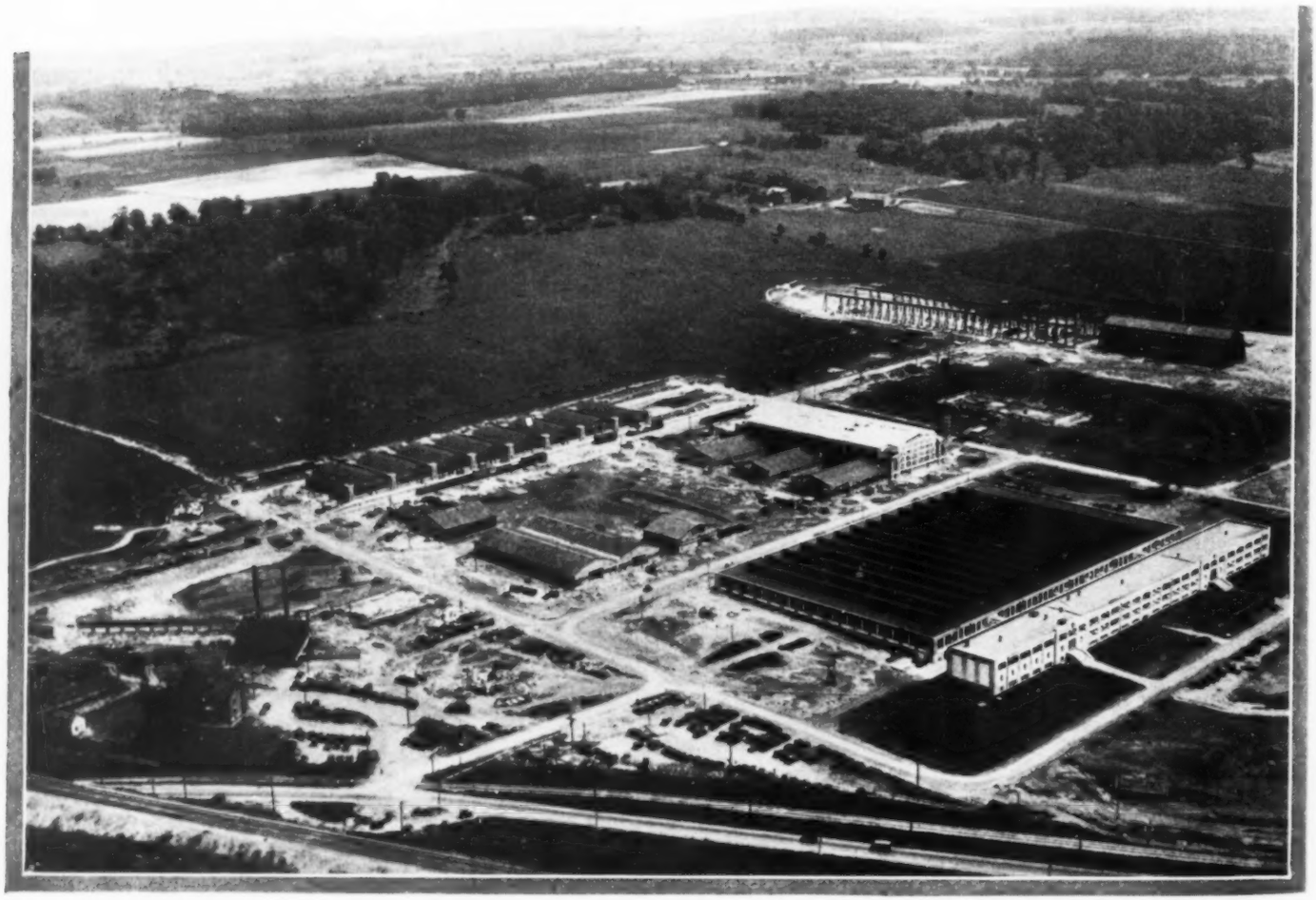
The citizens of Dayton, Ohio, gave the government 5,000 acres of land about 2½ miles outside the city limits for the development of an experimental air station. It is on this site that the present construction program is being carried out. The city reserved 20 acres for the erection of a monument to the Wright brothers, for whom the field is named.

The station is to be completely equipped with an administration building, laboratory, boiler house, shops, foundry, warehouses, dynamometer building, propeller test rig, generator power building, wind tunnel buildings, torque stands, hangars, radio building and garage. The aerial photograph, taken last summer, shows how far work had progressed at that time. A photograph from the air, taken today, would not show any marked change with the exception of the dynamometer building, construction of which has advanced considerably.

Most of the buildings are of steel and brick construction. The administration building, however, is a two-story reinforced concrete structure. Behind it is the laboratory, 400 x 500 ft. in plan. The latter building is of the ordinary steel mill type construction, with a saw-tooth roof. In addition to the construction of buildings at the field, a complete water system and storm and sanitary sewer systems were installed.

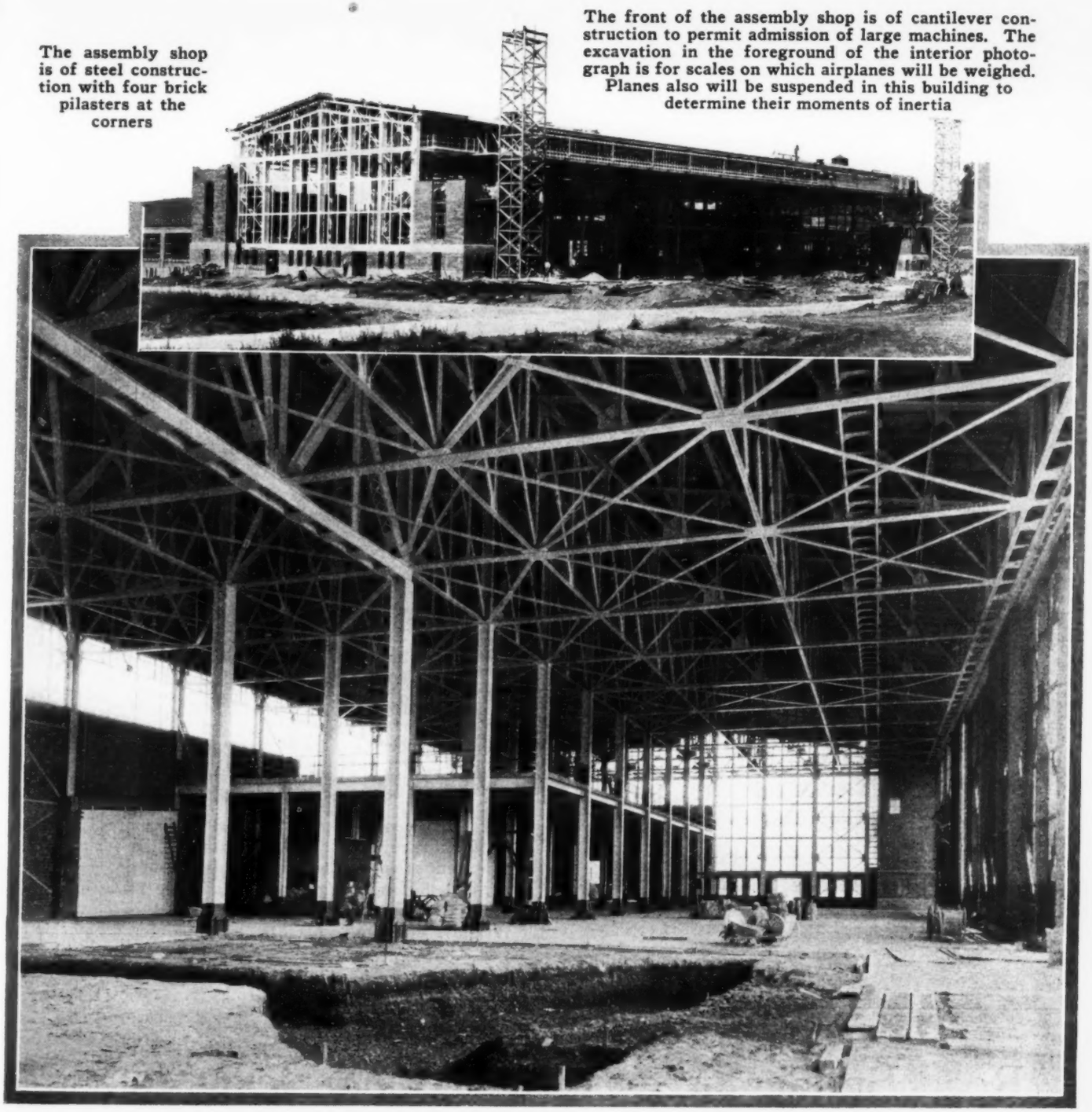
Hangars and a permanent boiler house are to be built next year. A temporary power house is now heating the buildings. At present, many of the buildings have a temporary cover of corrugated sheets. The administration building, laboratory, shops and warehouses are complete. All the buildings are to be connected with the boiler house by utilidors, underground concrete tunnels for cables and water, steam and air lines.

More than $2,000,000 already has been spent in construction at the Wright Field experimental station. This photograph from the air shows some of the big buildings



The assembly shop is of steel construction with four brick pilasters at the corners

The front of the assembly shop is of cantilever construction to permit admission of large machines. The excavation in the foreground of the interior photograph is for scales on which airplanes will be weighed. Planes also will be suspended in this building to determine their moments of inertia



A number of contractors have participated in the construction of the various units of the station. Among these are the Danis-Hunt Company, the H. R. Blagg Company, Greene & Sawyer, J. I. Geiger, the E. H. Latham Company and Charles H. Shook, Inc. The E. H. Latham Company, Columbus, Ohio, built the administration building and more recently finished the final assembly shop with its three wings, the machine, sheet metal and wood shops. The cantilever construction of the final assembly shop is clearly shown in the photograph above. Twelve rolling doors, each weighing 7 tons, are hung along the front of this building allowing the whole front to be thrown open. New planes are subjected to static tests in the assembly shop.

The acoustics of the newly completed auditorium in the administration building proved to be abominable. The beams directed the waves against the ceiling, and the ceiling turned them upon the sufferers beneath. Concord of sweet sounds became a clashing dissonance.

The formal opening of the new Wright Field, when the auditorium would receive its baptism of eloquence, was only one month away when permission to correct the acoustic evils was granted. Quick work and cheap work were necessary. As usual, the appropriation for construction had been stretched to its utmost in an effort to get as much as possible of the new field completed. Few dollars were available for the treatment of bad acoustic properties. So F. G. Stewart, architectural engineer for the Materiel Division of the Air Corps, had several things to consider in deciding how the treatment should be given.

Previous experience of Mr. Stewart on the Cleveland Auditorium had disclosed to him the remarkable acoustic properties of a material known as Macoustic plaster, and it was decided to use it in correcting the faults in the Wright Field auditorium.

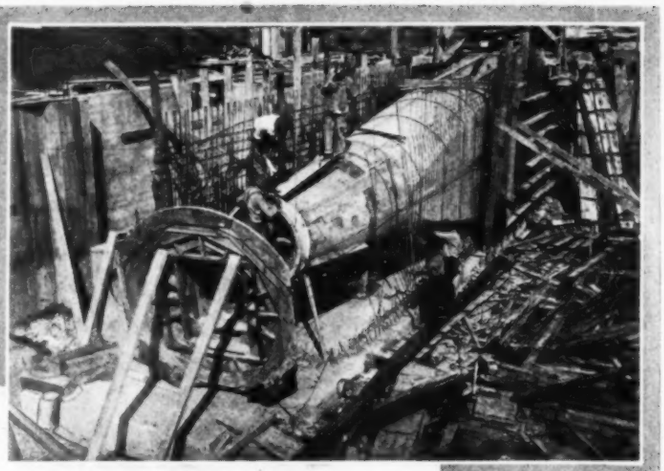
Four days were required to cut away the old plaster on the panels. A coating of gypsum plaster was then put on the

metal lath, and over this was spread at least ½ in. of Macoustic plaster. The operation of applying the plaster took 2½ days. Approximately 5,700 sq.ft. of ceiling was treated and the results proved the wisdom of the method adopted.

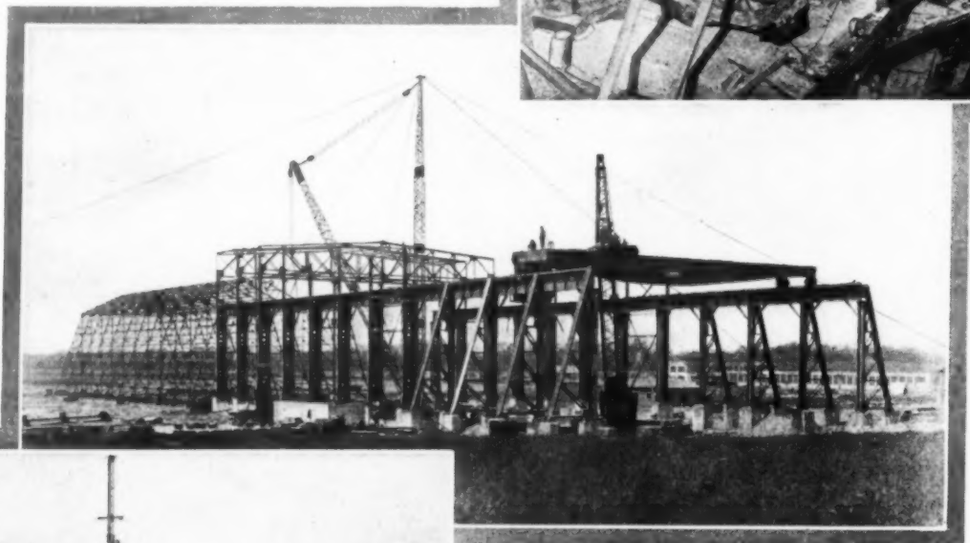
Charles H. Shook, Dayton, is at present constructing the dynamometer building. A photograph shows formwork on one of the ventilating tunnels which will supply air for testing air-cooled motors. The dynamometer building will be the laboratory in which aircraft power plants are tested.

A 500-acre flying field is now being prepared by the Quartermaster Corps at a cost of about $100,000. Construction of the propeller test rig, generator power house, and wind tunnels has been temporarily halted until more funds are available. Like most U. S. Army projects, the Wright Field development is carried on with funds appropriated by Congress, and these appropriations usually are made in annual installments.

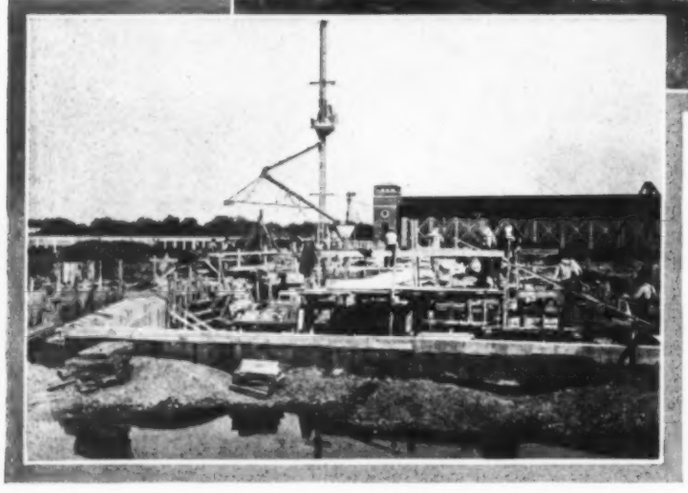
Wright Field is to be operated by the Materiel Division of the Air Corps. Construction work is being performed by the Quartermaster Corps under the supervision of Captain E. M. George, constructing quartermaster.



Above — Placing reinforcing steel for one of the ventilating tunnels



Below — Pouring concrete on the dynamometer building. An Insley mast hoist was used



Putting up craneway and roof structure of general power house. At the left is the wind tunnel structure

Road Builders Meet in Cleveland Next Month

AFTER making Chicago its convention headquarters for a number of years, the American Road Builders' Association has moved to Cleveland for its 1928 Convention and Road Show, which will take place January 9 to 13. The Convention will be held in the Hollenden Hotel, and the Road Show in the great Cleveland Municipal Auditorium and adjoining buildings. The hotel and the auditorium are only a block apart.

An efficient hotel committee is arranging accommodations for all those who expect to be in Cleveland for the Convention and Show. A. J. Kennedy, Room 304, Chamber of Commerce Building, Cleveland, is Chairman of this committee, and all who intend to be in Cleveland, but have not yet made reservations, should write to him at once.

The Road Show will be bigger than ever before, as much more space is available than in previous years. Makers of road-building equipment will show their latest models, and practically every manufacturer and supplier in the country whose products are used in highway work will be represented.

Reduced railroad fares have been arranged for those who attend the American Road Builders' Association Convention and Road Show. When purchasing tickets to Cleveland, a certificate (not a receipt) should be asked for. This certificate, when properly validated by the American Road Builders' Association, will entitle the purchaser to a return ticket at one-half price.

Charles M. Babcock, state highway commissioner of Minnesota, is president of the Association, and under his direction, an unusually interesting program has been arranged. There will be sessions for engineers, contractors and other officials, and the question of arranging a city officials' division will be discussed. Charles M. Upham, business manager, is managing the Show as usual.

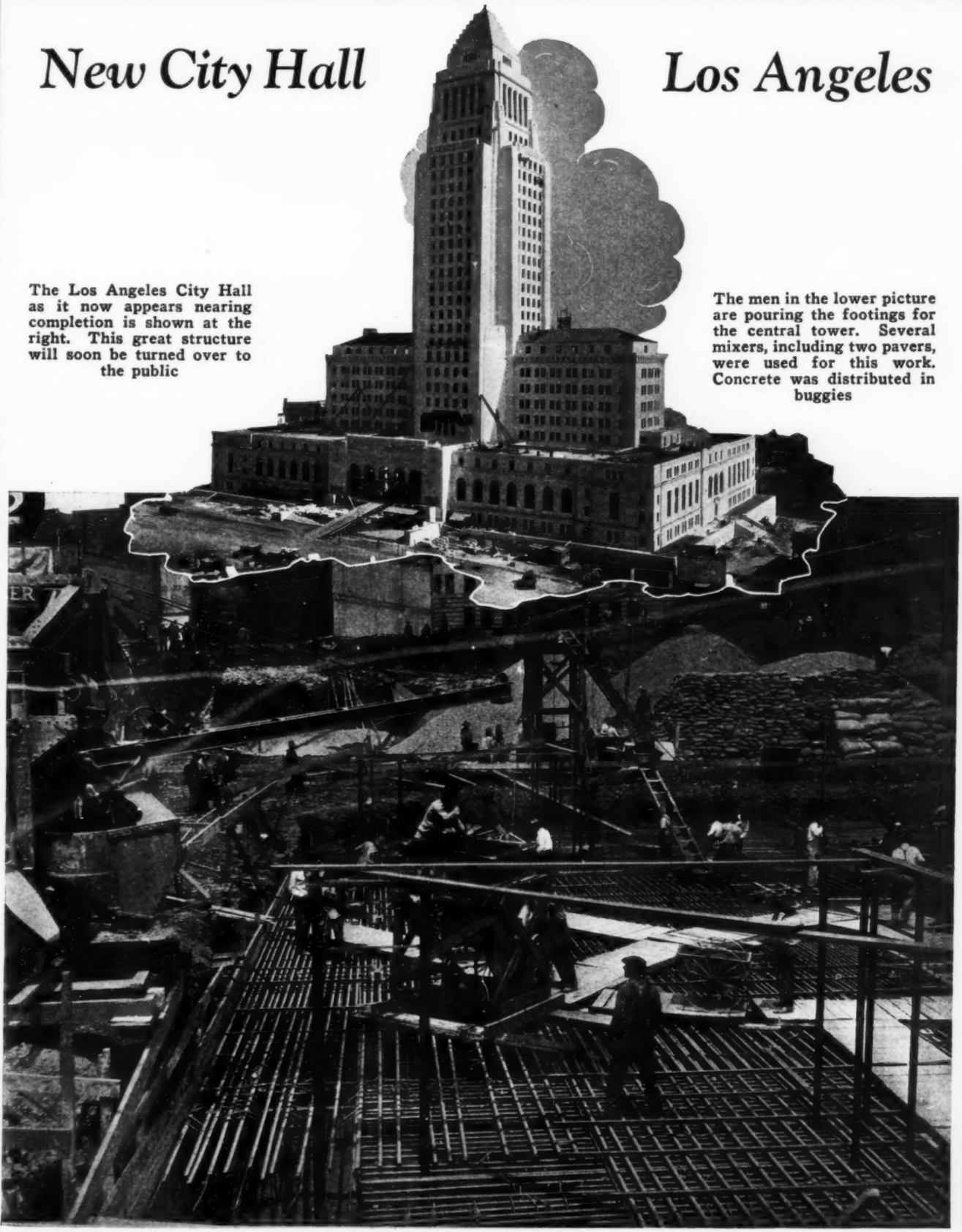
Construction Methods and *Engineering News-Record*, both McGraw-Hill publications, will occupy space A.A.27 on the main floor of the municipal auditorium. This space is just inside the main door, is easy of access, and those in charge will be glad to be of service.

BLUE BOOK

New City Hall *Los Angeles*

The Los Angeles City Hall as it now appears nearing completion is shown at the right. This great structure will soon be turned over to the public

The men in the lower picture are pouring the footings for the central tower. Several mixers, including two pavers, were used for this work. Concrete was distributed in buggies

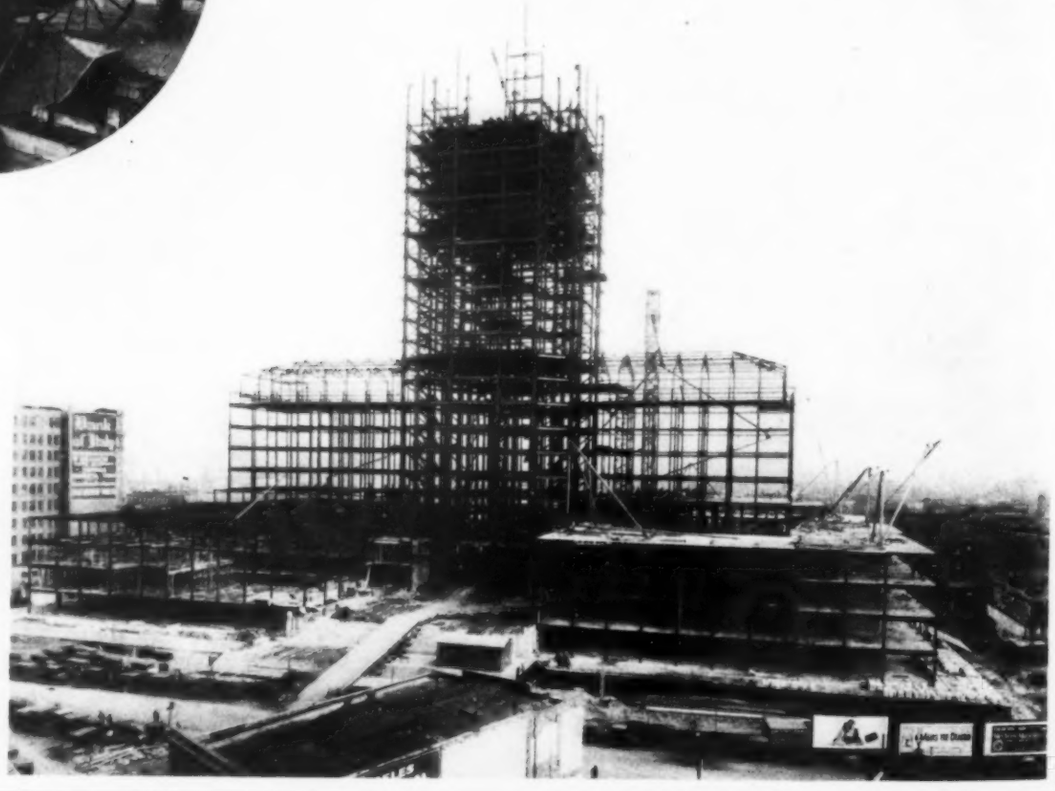


BLUE • BOOK

New City Hall

THE new Los Angeles City Hall is one of the notable buildings on the Pacific Coast. The building is 470 ft. by 250 ft., the dominant feature being a central tower 100 ft. square which rises 28 stories to a total height of 430 ft. The wings each side of the central tower are 150 ft. in height. The City Hall was designed by three Los Angeles architects associated for the project. They are: John C. Austin, Albert C. Martin and John Parkinson. Work was begun in March, 1926. The building will cost about $5,000,000. From 500 to 800 men were employed by the various contractors who handled the work.

At left—The front of the building as it looked in the middle of October last. The photograph in the circle shows one of the methods used in placing concrete



At right—A long runway was built up the front steps of the building to the first floor. Trucks mounted this runway, which divides into two branches, each leading to the tops of bins over concrete mixers

BLUE • BOOK

Los Angeles

THE general contractor for the City Hall is the C. J. Kubach Company of Los Angeles. The excavation, amounting to 60,000 cu.yd., was handled by the Los Angeles Rock & Gravel Corporation. Footings were poured by Lange, Bergstrom, Inc., also of Los Angeles. The structural steel, amounting to 8,167 tons, was fabricated by the McClintic-Marshall Company of New York and Pittsburgh and was erected by F. L. Holser & Company of Los Angeles. The Raymond Granite Company of San Francisco has the contract for the stone. The supervision of the work for the architects is handled by N. W. Kelch.

At right—Laying the cornerstone of the City Hall with appropriate ceremonies on June 22, 1927. In the circle is a contractor's hoist on the job

At left — The City Hall as it appeared last July. At that time the steel was all up and most of the stone had been set. This picture was taken just three weeks after the cornerstone laying shown above

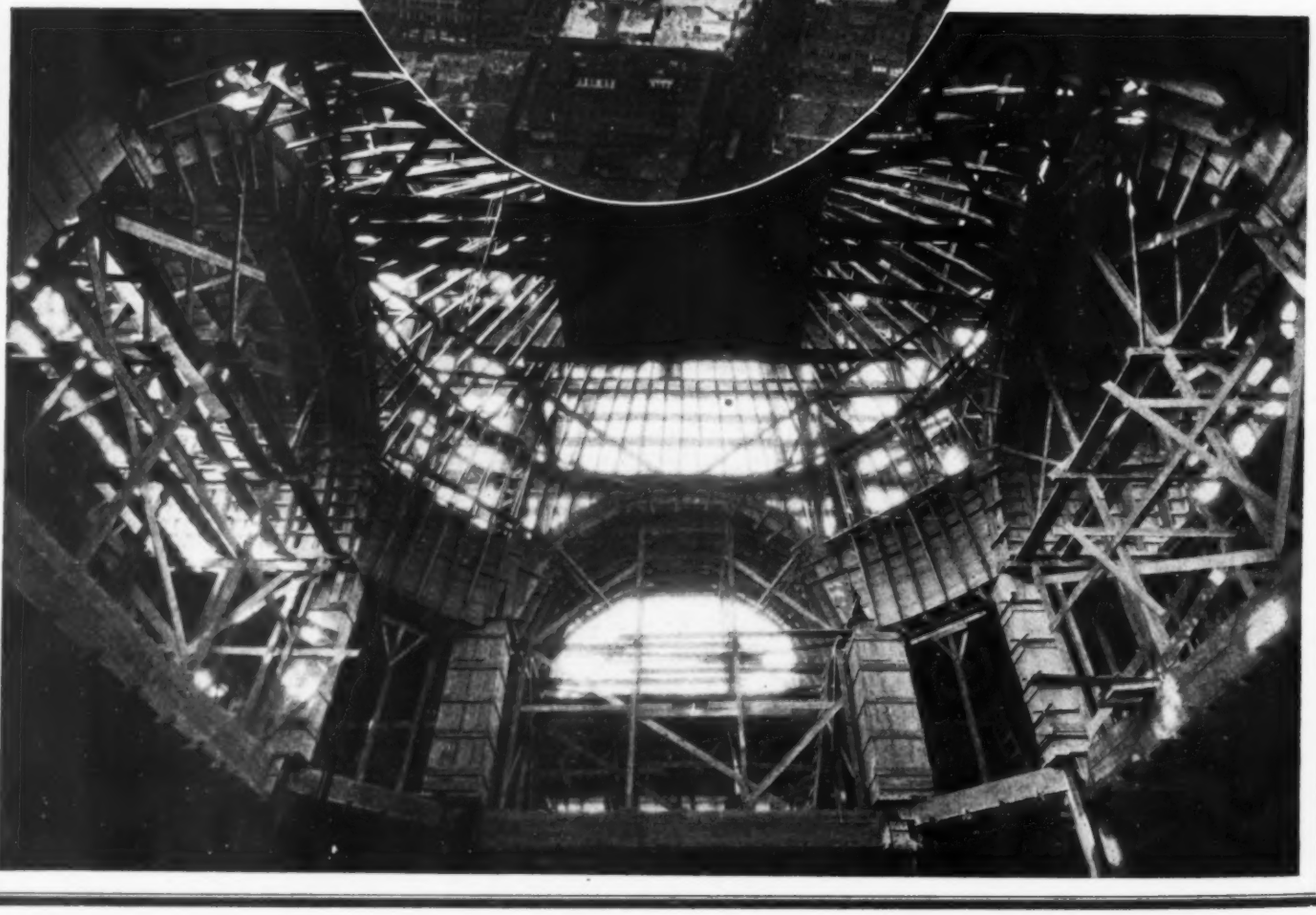
BLUE BOOK

New City Hall — *Los Angeles*

At left — From the air the new City Hall stands out as prominently as it does when seen from the ground

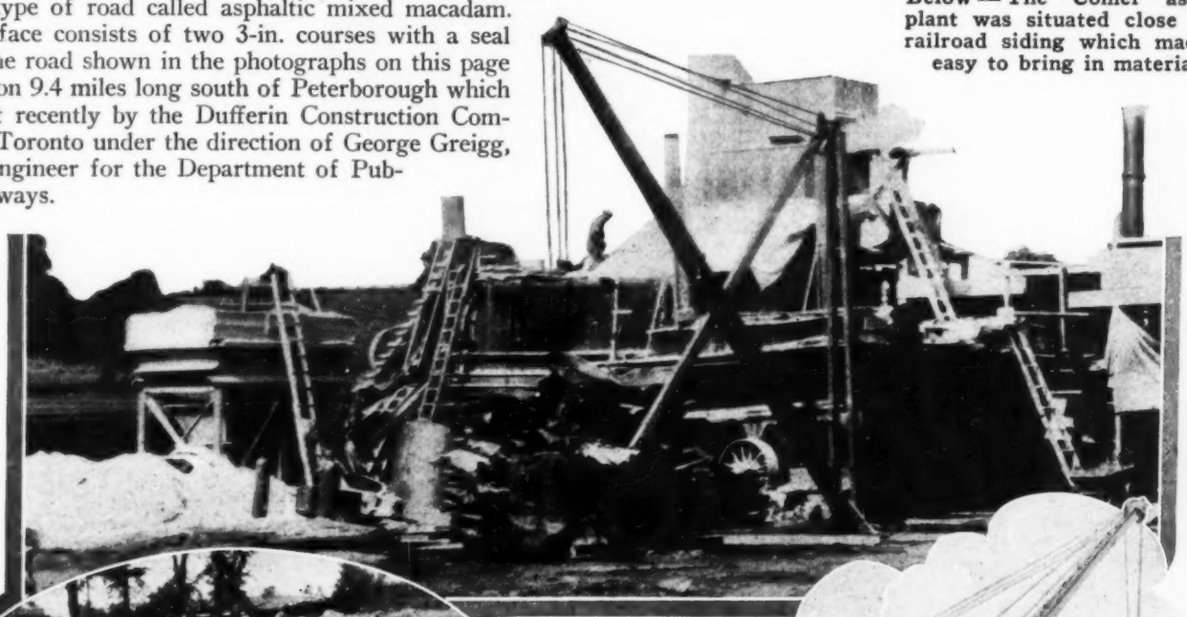
©P. & A.

Below—Looking up into the dome while it was under construction. The forms were supported by a suspended timber octagon

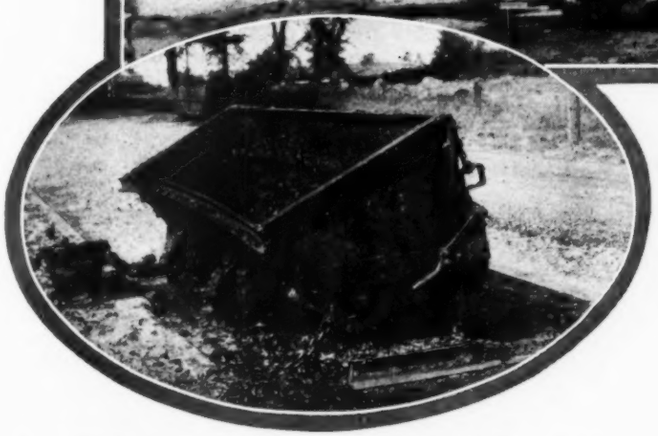


Asphaltic Mixed Macadam in Canada

THE Department of Public Highways of the Province of Ontario has been building recently a type of road called asphaltic mixed macadam. This surface consists of two 3-in. courses with a seal coat. The road shown in the photographs on this page is a section 9.4 miles long south of Peterborough which was built recently by the Dufferin Construction Company of Toronto under the direction of George Greigg, district engineer for the Department of Public Highways.

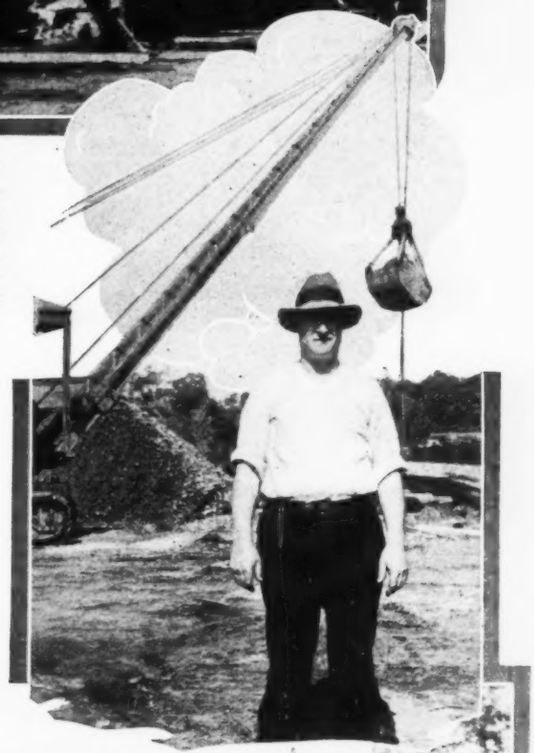


Below — The Comer asphalt plant was situated close to a railroad siding which made it easy to bring in materials

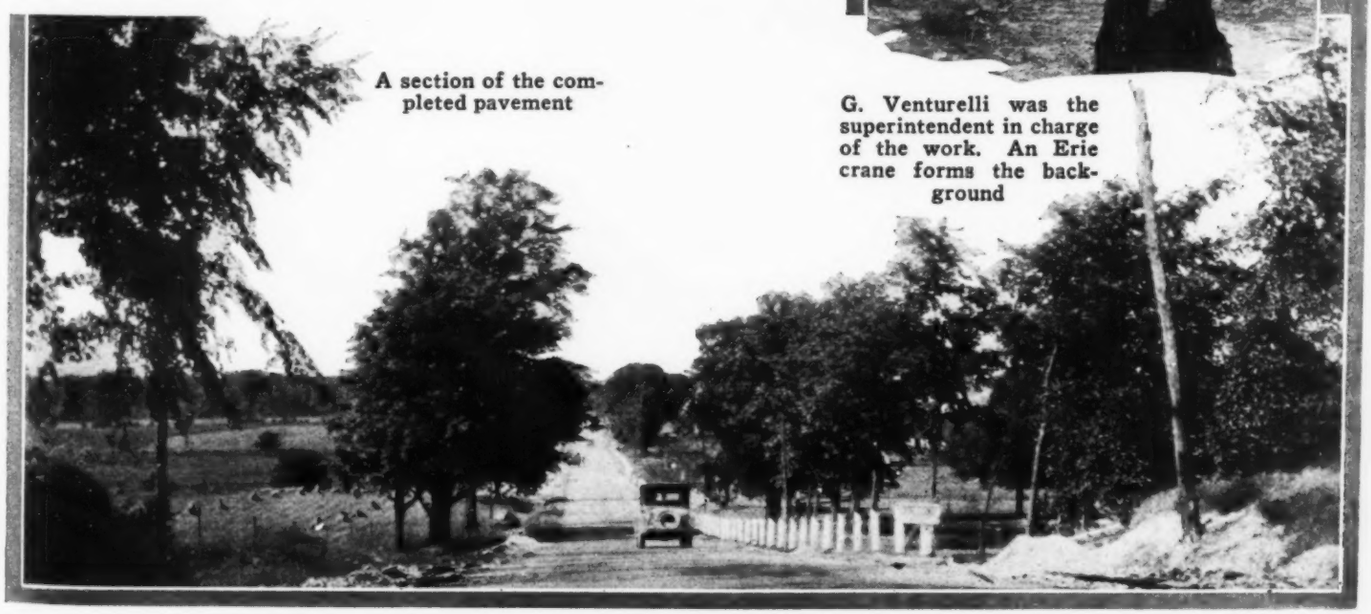


At left — The asphalt was deposited on the road by this spreader fastened to the rear of a truck

The method used was to put down the first 3-in. course of asphalt, roll it, leave it for 24 hours and then put down the second course. This resulted in a thorough consolidation of the pavement, the asphalt acting as more or less of a lubricant until the consolidation was effected.



G. Venturelli was the superintendent in charge of the work. An Erie crane forms the background



A section of the completed pavement

New Tracks for Old on a Busy Street

C. A. Hartley
Superintendent
L. O. Herrold Co.
Oregon City, Ore.

Wins First Prize of $25.00

Street before reconstruction work was begun

The situation of Oregon City between a high bluff and the Willamette River made the reconstruction of the electric railway track a difficult problem. Practically all through vehicular traffic passes along Main Street where the railway line is located. The work was done for the Portland Electric Power Company by the L. O. Herrold Company.

Stone block surface being removed from the track area

The old ties were imbedded in concrete and were removed with a portable crane mounted on a truck. A large pointed hook was fastened to the end of the crane cable and this hook was driven into the ties with a sledge

Above — Showing the street after the ties had been removed. The large chunks of concrete which are so prominent in the picture were salvaged and later used again for riprap

At right — Excavating with tractor and Fresno. The tractor started at one end of a section, dumped at a predetermined point, continued down the trench and brought back material

The method used to handle the work is shown in the accompanying photographs. First, the old Belgian block surface in the track area was removed and salvaged, and the old track and ties taken out. A trench 8 ft. wide and 21 in. deep was excavated, and the bottom rolled. On this subgrade an asphaltic concrete base approximately 8 in. in thickness was laid. Over this a thin layer of screenings was spread, on which the new track was placed. Above the ties a two-course asphaltic concrete base and surface pavement was laid.

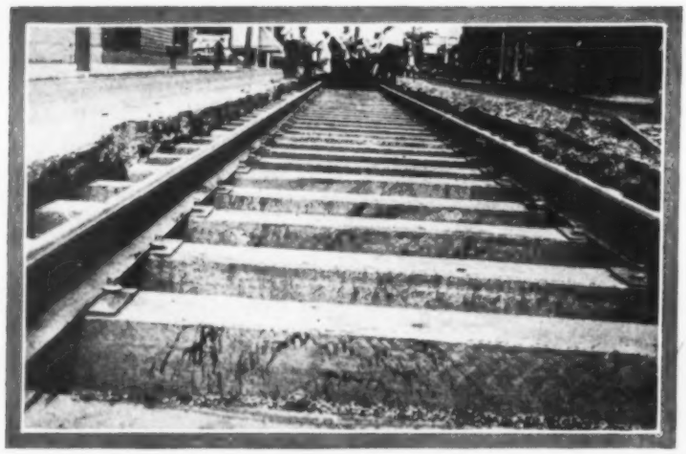
Loading the material with a clamshell bucket

Finishing the subgrade. The template is being used to obtain a uniform thickness of 21 in.

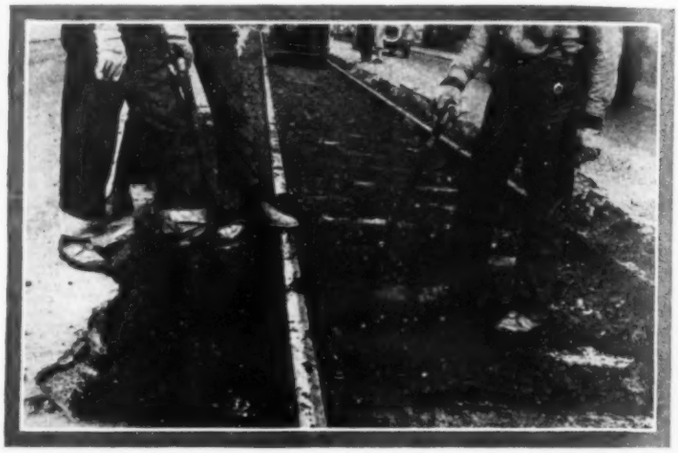
The finished asphaltic concrete base. Large aggregates were used

Below—The coating of fine screenings on top of the base course

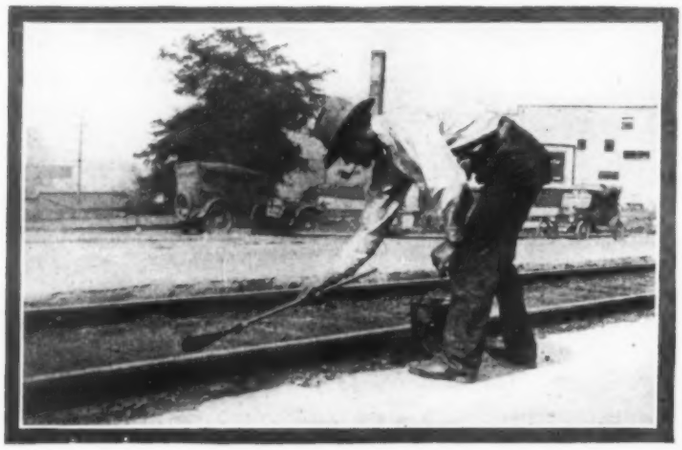
In charge of the work for the Herrold Company was C. A. Hartley, superintendent. Thomas Pumfrey, chief engineer of railways of the Portland Electric Power Company, supervised the work and J. R. Stafford, city engineer of Oregon City, looked out for the interests of the municipality.



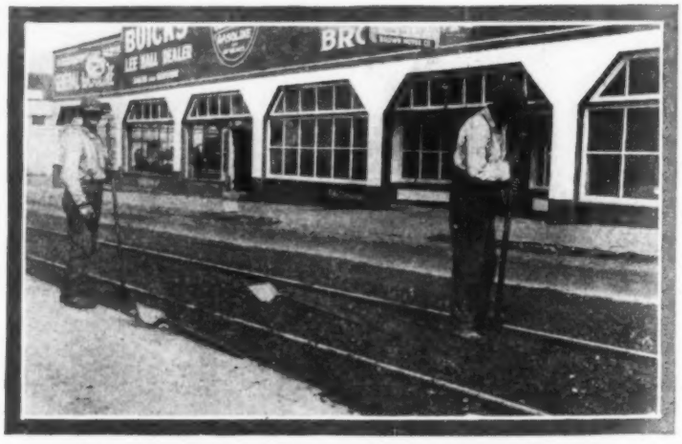
The ties and rails were then laid and the track brought to grade. The paving crew in background is filling space between ties with hot asphaltic concrete



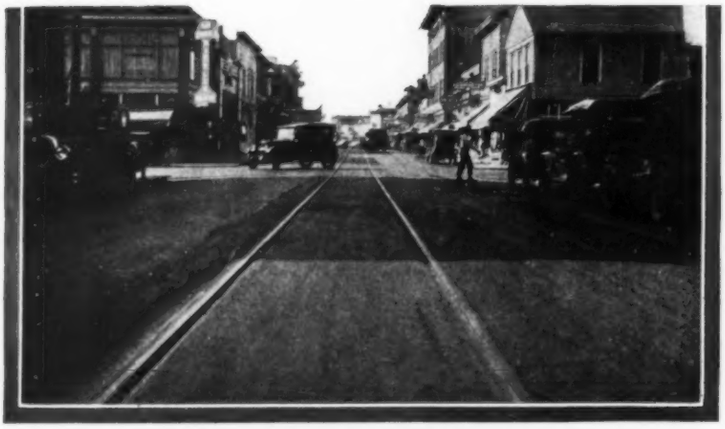
Tamping the black base mixture into the space under the rail



Painting the rail before laying the black base on top of the ties

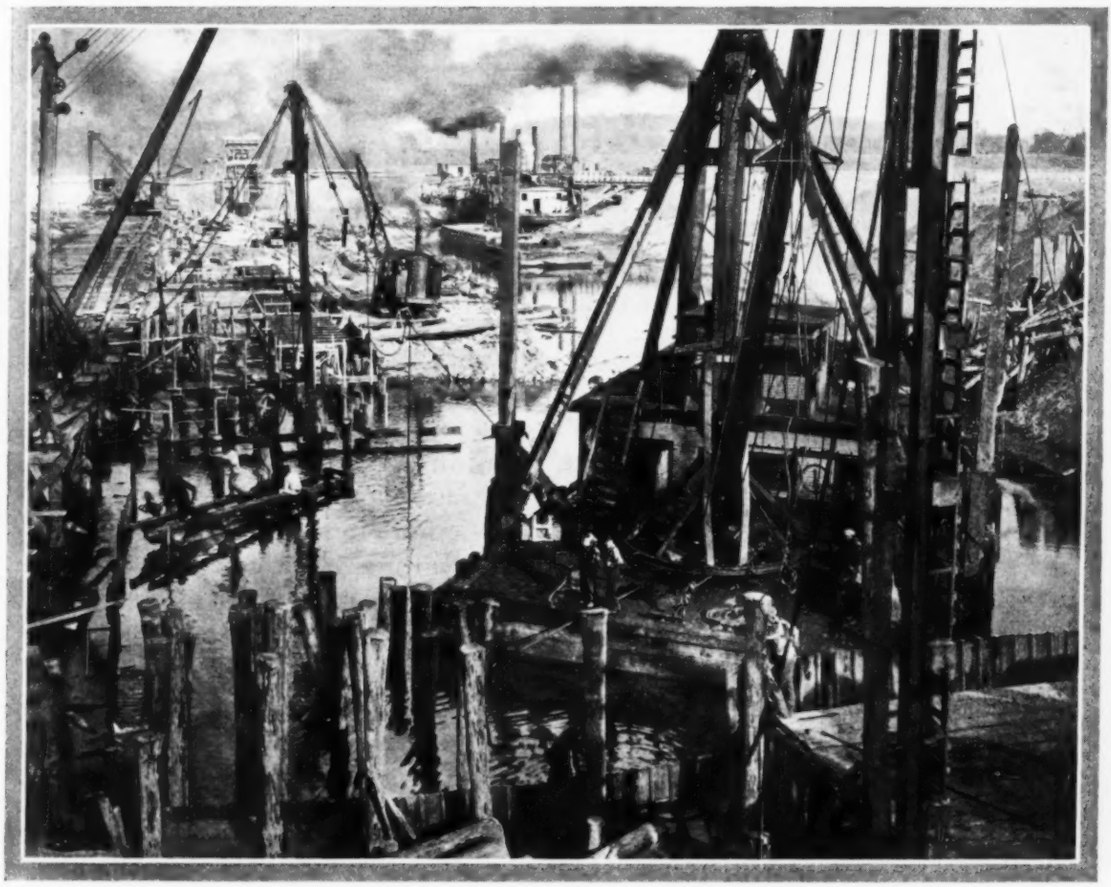


Tamping the black base mixture next to the rail



The completed wearing surface

Many Machines Are Building Golconda Dam



A. W. Crisfield
Cadet Engineer,
U.G.I. Contracting Co.,
Bridgewater, Conn.

Wins
Second Prize
of $15.00

Driving piles and pouring concrete for foundation of dam under construction for the U. S. government in the Ohio River at Golconda, Ill., by the U. G. I. Contracting Company. The construction includes the building of a lock. H. G. McCormick is the engineer in charge. Derrick boat was floated in before cofferdam was pumped

Building Foundation of Frame Railway Trestle

E. B. Patton, *Carpenter, C. & O. Railroad,*
Bownemont, W. Va.

Wins
Third Prize
of $10.00

Traffic was maintained on a frame trestle over a bog on the C. & O. Railroad while new concrete foundations were built. After the falsework was in place, an excavation 5x18 ft. and 1½ ft. deep was made. This was filled with concrete and a pedestal with a base 3 ft. at the bottom, 1½ ft. at the top and 1½ ft. in height was poured. An anchor bolt was placed at each end to hold the sill in place

With Pneumatic ONE Worker Equals

The development of CP compressed air tools has immeasurably benefited labor and advanced engineering. Great buildings, water supply projects, canals, subways, sewers, highways, municipal improvements and other civil engineering and construction projects the world over are now completed in shorter time, with less expenditure of manual labor and capital, by the use of compressed air.

Thousands of successful contractors are today using CP pneumatic equipment because it enables one worker to accomplish more in a day than a score of workers with both obsolete tools and methods. CP products have a reputation for standing up better under severe usage and for operating with greater economy because of their advanced design and construction and because of the high manufacturing standards maintained by the Chicago Pneumatic Tool Company.

New York City. CP-10 Rock Drills at base of a cliff. Four of these drills made short work of 75,000 sq.yds. of solid rock.

Montreal, Canada. BQ-46 Demolition Tool cutting asphalt and concrete pavement.

San Francisco, Calif. Breaking up concrete rapidly with a CP-114 Demolition Tool. Striking a fast, powerful blow, it has great capacity.

Chicago Pneumatic Tool Company

Tools — MANY

Illustrated on these pages are but a few of the many ways in which CP equipment is being profitably used by contractors. Our latest bulletins give details of construction and we will gladly supply you with convincing figures to PROVE THE DEPENDABILITY AND LOW MAINTENANCE of CP tools. A leader in the industry for over thirty years, the Chicago Pneumatic Tool Company has sales and service branches all over the world, rendering a service of the same high standard as the products they make.

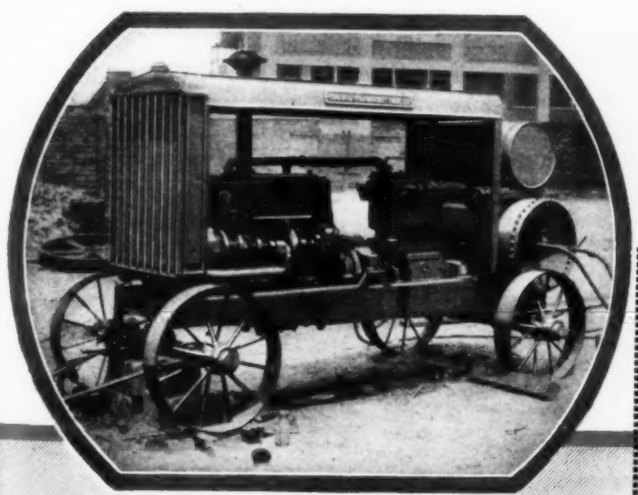
Let us help solve your problems. We have a fund of reliable information which is at your disposal.

(Above) Paris, France. BQ-46 Demolition Tools are being used for removing a reinforced concrete wall, preparatory to building a magnificent approach to the famous Church of the Sacre Coeur, on the top of Montmartre.

Syracuse, N. Y. CP Portable Gasoline Driven Compressor mounted on a Ford. Brings power right to the job. No delays with this equipment.

New York City. Fast drilling with CP-5 Drifter on telephone conduit job. This contractor found CP Rock Drills to be the most economical per cubic foot of rock removed, proved by assembling all his data of footage, air consumption and repairs covering three years' operations.

New York City. CP Portable Gasoline Driven Compresor mounted on steel wheels, supplying air for calking a gas holder. Goes anywhere, anytime. Thousands of contractors are beating schedules with this compressor.



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- ☐ Riveting Hammers
- ☐ Chipping and Calking Hammers
- ☐ Drifters

Firm Name.....

Street Address.....

City..... State.....

Attention of Mr.....
(Kindly give name and position held)

J-290

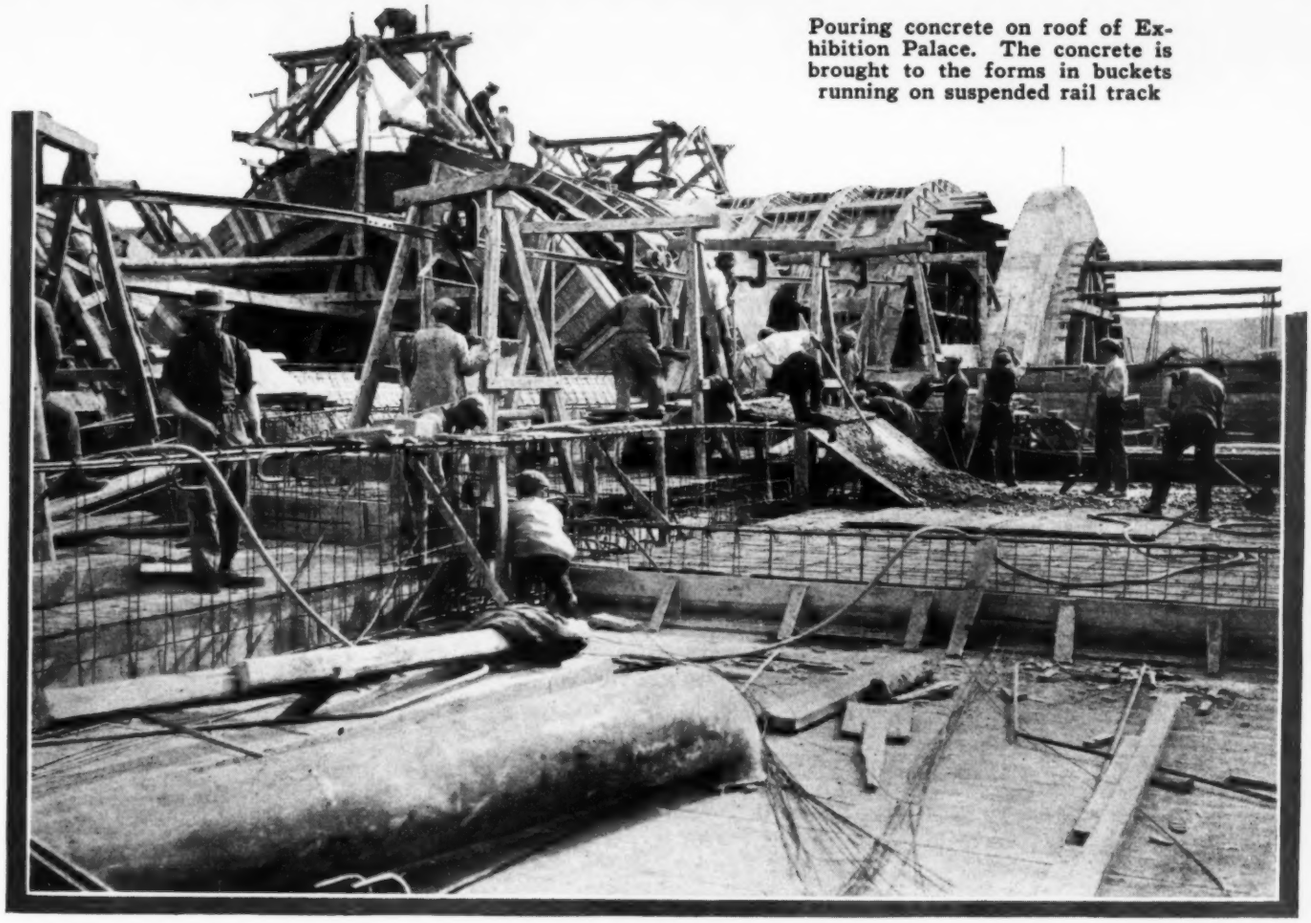
Czechoslovak Construction

Three views of the Exhibition Palace at Brno under construction. They give a good idea of the way in which the work is being done

Methods Used in Building Great Concrete Exhibition Palace at Brno

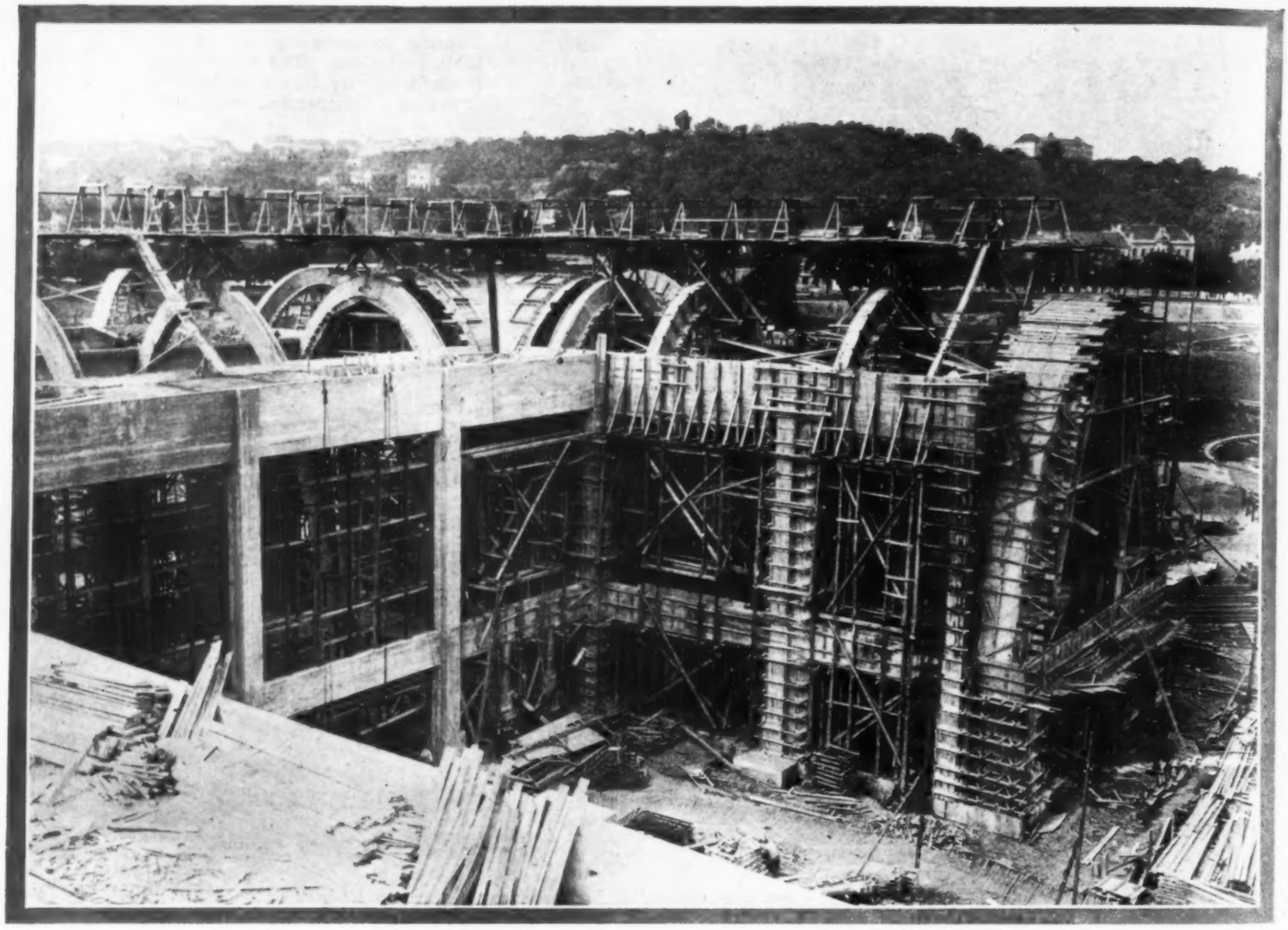
METHODS unusual in the United States have been used in the construction of the great Exhibition Palace in Brno, Czechoslovakia. Details of the work are shown in the various photographs which accompany this article and which were sent to *Construction Methods* by Charles Golda who has been employed on the work as assistant to the general superintendent.

Aggregates for the concrete are obtained by a bucket dredge which is shown at the right in the photograph at the top of this page. This machine is excavating a pond which is filled with ground water. The dredged material is hauled in industrial cars over narrow-gage track to the washing plant where the clay is removed and the large stones eliminated. After mixing, the concrete is elevated in a wood tower to the top of the arches where it is handled in buckets on a suspended rail track. The way in which this track carries the concrete to various parts of the building may be seen at the left. Man power is used to move the heavy



Pouring concrete on roof of Exhibition Palace. The concrete is brought to the forms in buckets running on suspended rail track

Below—The big structure will be covered by a glass roof. Pouring the concrete arch ribs which will support the glass



One wing of the big building. The platform and overhead rail for transporting the concrete is much in evidence

buckets, the men walking along a platform under the rails and pushing the buckets ahead of them. The concrete is distributed from the buckets into steel tubes which take it to the forms. The platforms reach all parts of the job.

When finished, the Exhibition Palace will be covered by a glass roof which will be supported on concrete arch ribs. The lower photograph on page 21 shows the methods used in pouring these concrete arch ribs.

Prizes for Highwaymen Only

IN recognition of the importance of the American Road Builders' Association which holds its annual Convention and Road Show at Cleveland the week of January 9, special emphasis will be put on highway work in the January, 1928, issue of *Construction Methods*.

TO add to this emphasis all three prizes in the monthly photographic contest, $25 for the first, $15 for the second and $10 for the third, will be awarded to pictures portraying highway construction or maintenance.

PHOTOGRAPHS to be eligible for the prizes should be taken by men employed on the jobs shown. The building of structures directly connected with highways, such as bridges and culverts, will be considered. No pictures taken prior to the 1927 road-building season will be eligible.

THE other conditions follow those of preceding months. Photographs must be addressed to Photographic Prize Contest, Construction Methods, Tenth Avenue at Thirty-sixth Street, New York City, and must be received on or before Saturday, December 10, 1927.

PICTURES received after that date will be considered as entries in the regular February, 1928, contest. *Construction Methods* will pay for all non-prize-winning photographs which it accepts for publication.

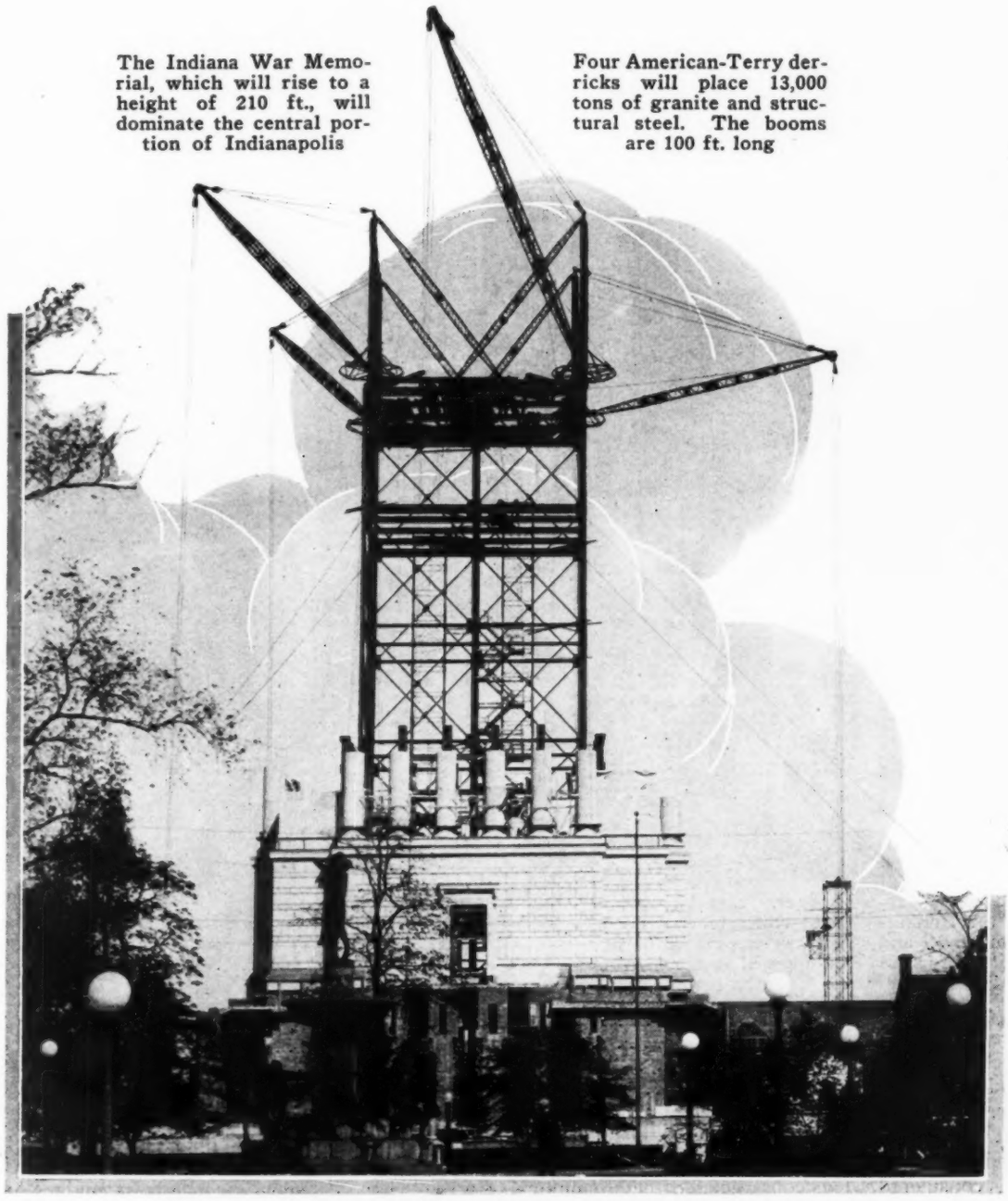
MANY miles of good roads were built during the 1927 season. If you were a member of the army of workers who built them and are proud of it, let your brothers in the industry have an opportunity to see what you did and how you did it. Here's your chance to show your stuff.

Building for the Ages

Impressive State Memorial to War Dead Rises in Indianapolis

The Indiana War Memorial, which will rise to a height of 210 ft., will dominate the central portion of Indianapolis

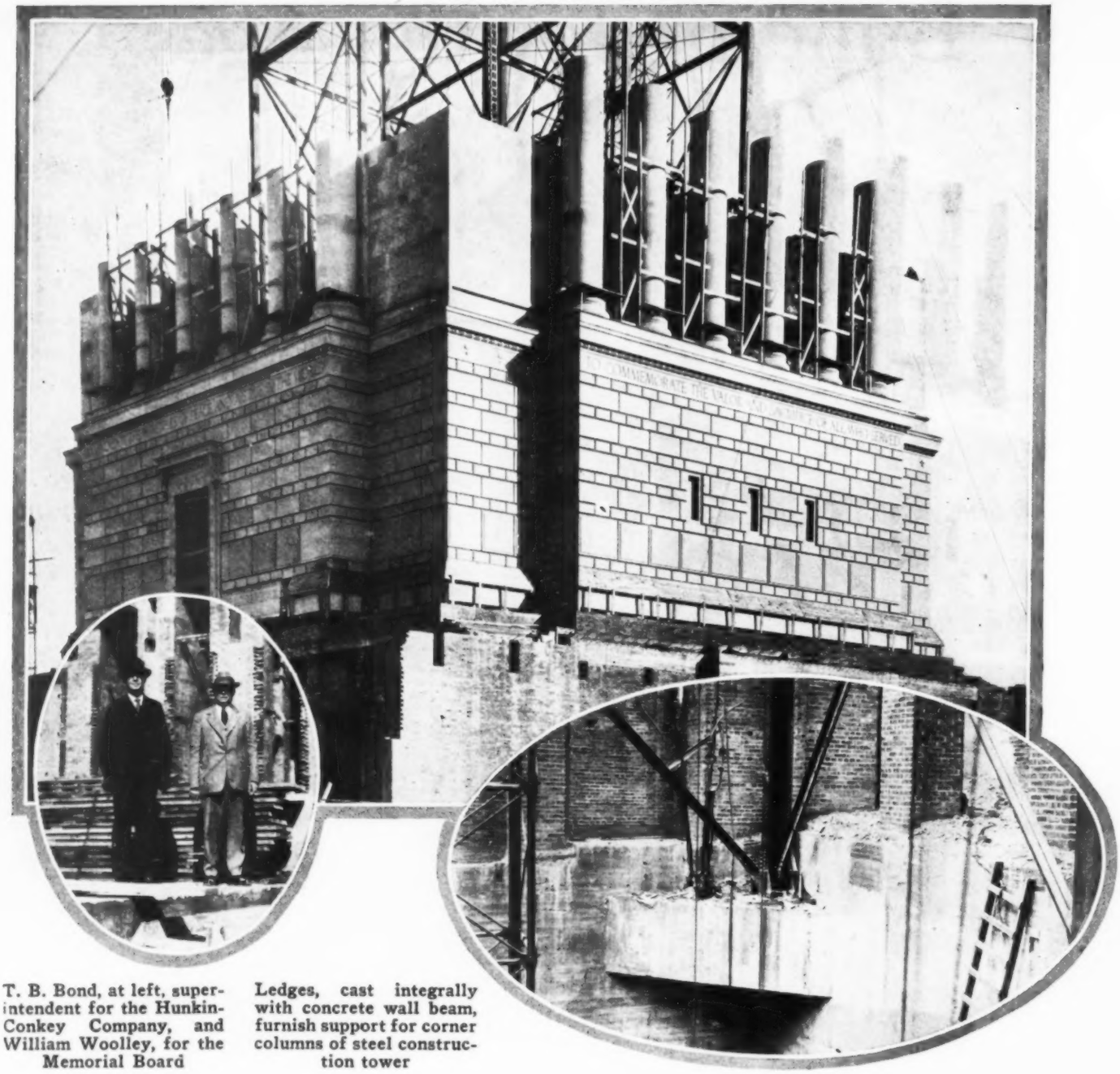
Four American-Terry derricks will place 13,000 tons of granite and structural steel. The booms are 100 ft. long



THOUGHTFUL care is the watchword of the men who are building Indiana's great War Memorial in Indianapolis. The architects, engineers and contractors are joining hands in an effort to construct a memorial that will forever honor the sons of Indiana who fell in the great struggle. One example is sufficient to prove this fact. Electric hoists are used exclusively to lift the stone, concrete, brick and mortar, and electric hoists are being used exclusively because of the fact that the smoke and exhaust from steam and gasoline hoists might stain the stone. The other details of the big job are being handled with the same thoughtfulness.

When the engineers of the Hunkin-Conkey Company, contractor for the superstructure, undertook the task of designing equipment for the construction of the building, it was evident that towers would be needed in erecting the shaft. The Memorial is a wall-bearing building, and derricks have to be supported on falsework. The great stone shaft, 90 ft. square, rises 190 ft. above the floor of the auditorium and 210 ft. above the level of the street. The auditorium is on the main floor. Between the bottom and top of the shaft there is to be only one structure. This is the floor of the Memorial Room, 60 ft. above the auditorium level.

The problem resolved itself into a question of what kind of towers and how many. Several combinations of wood and steel towers were figured. It was necessary that the structure should have great stability, as well as great height. The



T. B. Bond, at left, superintendent for the Hunkin-Conkey Company, and William Woolley, for the Memorial Board

Ledges, cast integrally with concrete wall beam, furnish support for corner columns of steel construction tower

podium of the Memorial is 238 ft. by 250 ft. in outside dimensions. Derricks capable of booming out to unload stone from trucks beyond the podium walls would have to be supported by the tower.

The 200-ft. riveted structural steel tower now in use was finally decided upon as the most serviceable and economical of the designs considered. It is constructed of eight columns, well trussed and braced, with a top framing of three 20-in. I-beams running north and south and five running east and west. About 25 ft. below the top is another similar framework to help resist distortion of the structure.

The four center columns of the tower are anchored to the concrete foundation mat of the Memorial. The corner columns are bolted to triangular ledges 4 ft. thick, which are tied into a concrete wall beam at a level just below the Memorial Room floor. These ledges were not included in the original design of the building. They were put in by the contractor to support the corner columns of the tower. A beam, 5 ft. 3 in. wide and 19 ft. deep, forms part of the wall at this elevation, and the ledges were poured monolithically with the beam. When the building is completed, they will be concealed by the auditorium dome below and the Memorial Room floor above.

At the four corners of the top of the tower are American-Terry steel stiff-leg derricks, equipped with 100-ft. booms and bull wheels for swinging. The corners of the towers and the sills of the derricks are tied down with cable to bolts anchored in the ledges. Thomas electric hoist engines of 65-hp. rating operate the derricks. The hoist and swinging engines are placed on the main floor under cover but outside the auditorium.

By the time the building is completed, the four derricks will have placed 13,000 tons of limestone, granite, and structural steel. The tower, which contains 190 tons of steel, was erected at a cost of $19,000. This cost, distributed into the tonnage, gives a tower charge per ton of less than $1.50. The salvage value of the structure will reduce this charge still more.

The derricks have unloaded all the 15-ton and 13-ton stones for the columns at full boom. A slight vibration is apparent to a person standing near the top of the tower when one of these heavy drums is lifted. There is no movement or distor-

tion of the structure, however, as checks made with a transit have shown.

Roof trusses will be set with the derricks, as the tower was designed to allow the members to be assembled and connected without interference. The stone for the roof, also, will be raised and set before the derricks and tower are taken down.

Two broad concrete stairways lead to the Memorial Room floor. Above this level there is no stairway at present. A steel circular stairway leading to an observation platform will be installed in one corner of the shaft upon completion of the building. T. B. Bond, the superintendent, was faced with the problem of getting men up and down a 190-ft. shaft in which there would be neither floors nor stairs. Ladders could have been used, but they offer a slow and difficult means of ascending and descending. Mr. Bond rejected the idea of ladders and invented a suspended stairway of his own. This unique stairway is hung on four cables, the supporting beams at the landings resting upon cable clamps. The group of photographs on this page shows the manner of construction better than it can be described.

Over 6,000,000 brick are going into the piers, columns, and wallbacking. The scaffold is supported on beams set in niches left in the brick walls and columns.

Construction of a building like the Memorial requires skill and experience on the part of the contractor. The Hunkin-Conkey organization is fortunate in being able to place capable men in charge of the work. Probably nowhere in this country can stonework be found excelling that on the Memorial for uniform color and texture, for cutting, or for setting. Select buff Bedford limestone is being used, and an inspector is kept at the quarry at all times to supervise all shipments for the Memorial.

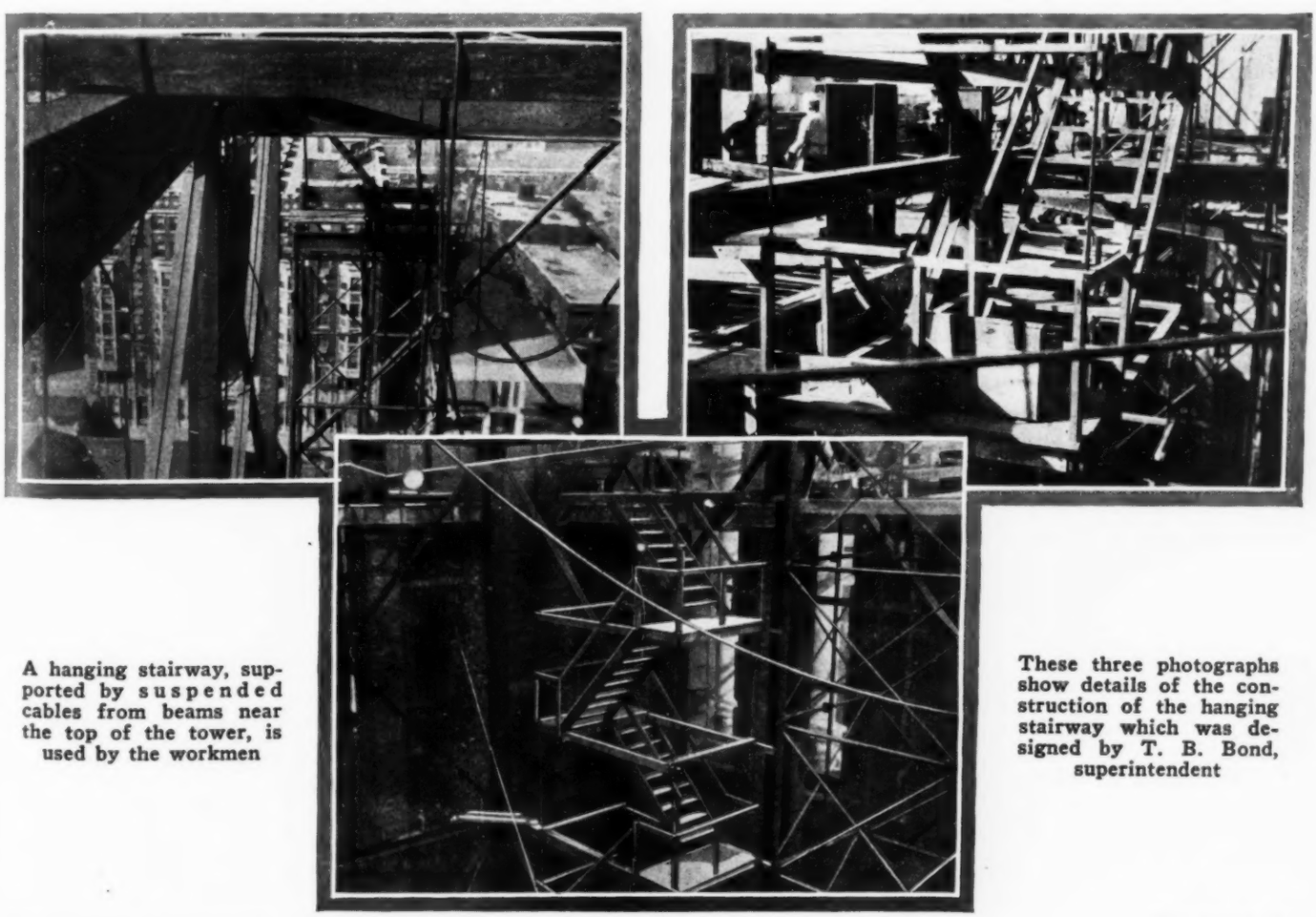
The World War Memorial will be the most imposing building in the city of Indianapolis. Its setting is a Memorial Park five blocks in length at the center of the city. From this position the structure will dominate all other architectural monuments of the Indiana metropolis.

The job of digging the excavation and building the foundations for the Memorial was let as a separate contract to the E. C. Strathman Company of Indianapolis. Work on this portion of the job began in March, 1926, after the site had been cleared, a number of buildings being razed or moved in order to make way for the Memorial.

The most interesting feature of the foundation work, which was described in the September, 1926, issue of *Construction Methods,* was the pouring of the main concrete pad. This is 130 ft. square and 2 ft. thick. It contains 10,078 cu.yd. of concrete reinforced with 1-in. and $\frac{5}{8}$-in. round bars. The pouring was handled by the Strathman Company as a single operation. It took 61 hours of continuous work which began at 10 o'clock one morning and was finished at 11 o'clock on the evening of the third day. Two Boss mixers were used.

The Memorial, when finished, will cost about $2,500,000. The present schedule calls for the completion of the shaft by July of next year. The finished structure will contain about 4,000 cu.yd. of concrete, 450 tons of structural steel, 100 tons of reinforcing, 120,000 cu.ft. of limestone, 20,000 cu.ft. of granite, 6,000,000 common brick and 500,000 hollow brick.

The name of Mr. Bond has been mentioned as superintendent for the Hunkin-Conkey Company, Cleveland, Ohio. William Woolley is clerk of works for the Indiana World War Memorial Board and for the architects, Walker & Weeks, also of Cleveland. Translated into more common terms, his title means field superintendent. The stone is being furnished by the Indiana Limestone Company and set by Alexander Howie, another Cleveland contractor. The steel tower was made and set up by the Central States Engineering Company of Indianapolis.



A hanging stairway, supported by suspended cables from beams near the top of the tower, is used by the workmen

These three photographs show details of the construction of the hanging stairway which was designed by T. B. Bond, superintendent

Step-by-Step Field Methods

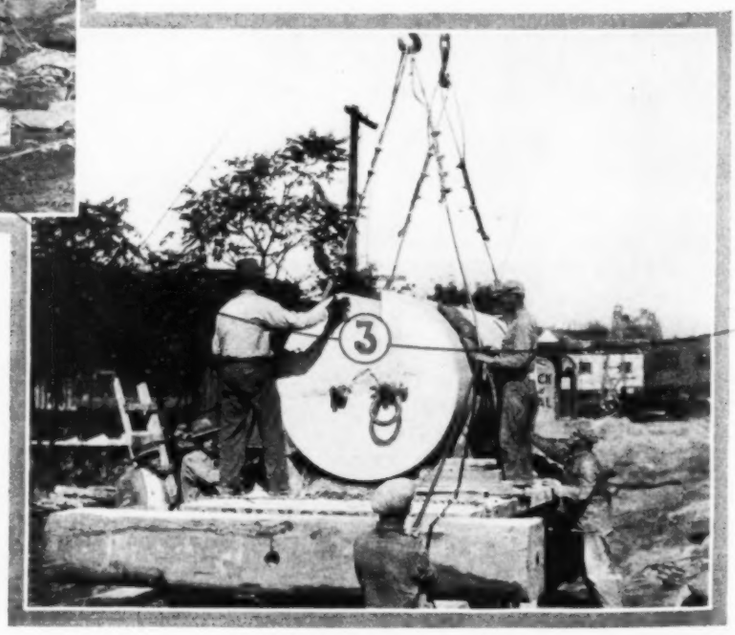
Handling Heavy Column Stones at Indiana War Memorial

Follow the Red Line

1. The drums are brought to the job on trucks. This is one of the lighter ones, weighing 13 tons. The drilled holes in the near end of the drum are being chiseled out to receive the box lewises. In the far end of the drum, a hole large enough to admit a 3½-in. steel pin has been drilled

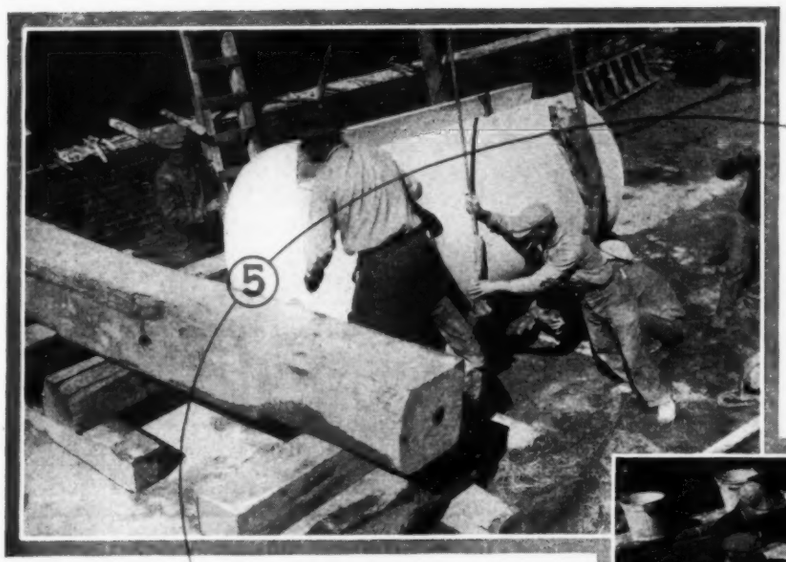
Stone column drums usually are upended in sand pits, sand bags and excelsior being used to give extra protection to the edges of the stone. The protection afforded by this method often proves inadequate, and the edges of the drum are broken. On the Indiana World War Memorial a greatly improved method is being used. A large number of heavy drums had to be unloaded and set on end. T. B. Bond, superintendent for the Hunkin-Conkey Company, general contractor, and Alexander Howie, who holds a sub-contract for setting the stone, handled the big column segments without damage by using a tilting block

2. Because of the weight of the stone, two box lewises are used. The exposed portion of the drum is cleaned, and blocks are placed on the ground at the rear of the truck to support the tilting block



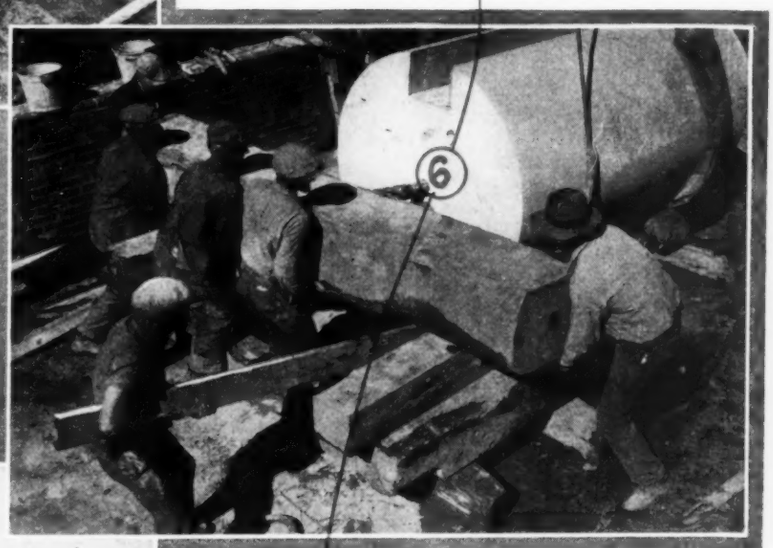
3. Slings from the derrick bridle are passed around the drum, and screw shackles are connected to the box lewises. The tilting block, which also has a hole to receive the 3½-in. steel pin, is in place

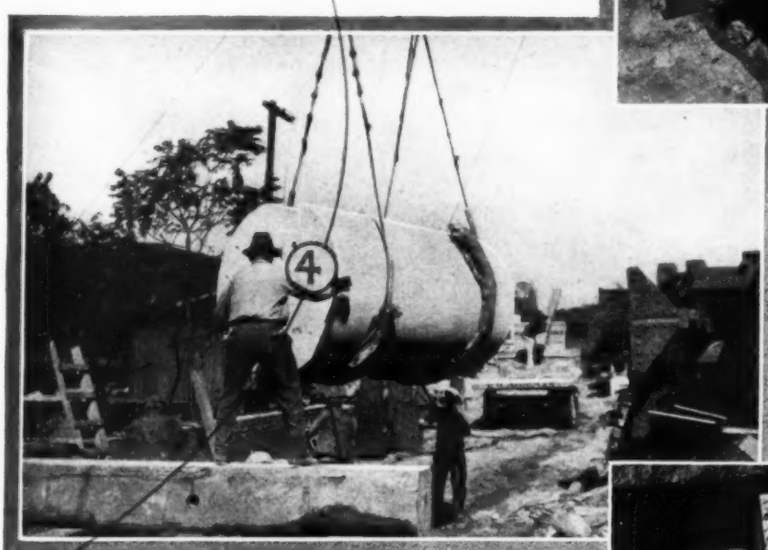
Follow the Red Line



5. A little effort is required to bring the hole in the center of the drum into position approximately opposite the hole in the tilting block

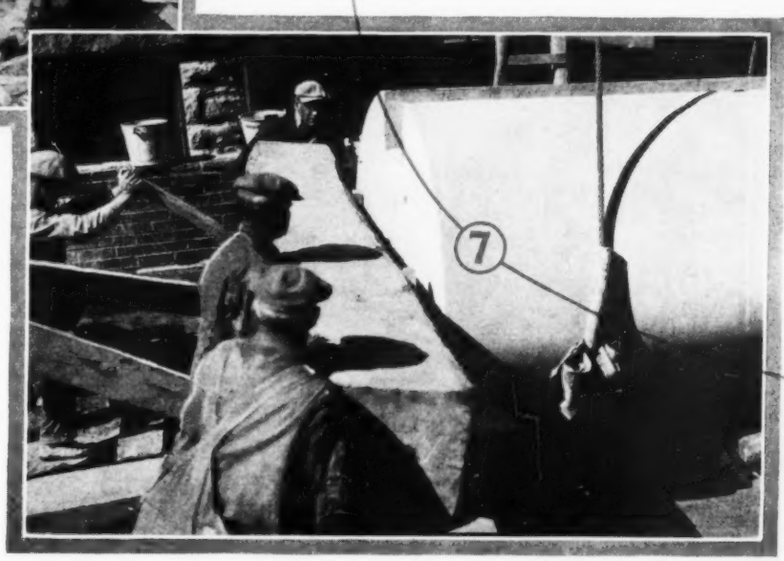
6. A piece of $3\frac{1}{2}$-in. steel shafting is inserted in the hole in the drum, and the tilting block is slipped on this pin





4. The stone is lifted to allow the truck to move away and is then turned end for end

7. Wood strips attached to the face of the tilting block keep the edges of the stone from coming in contact with the block



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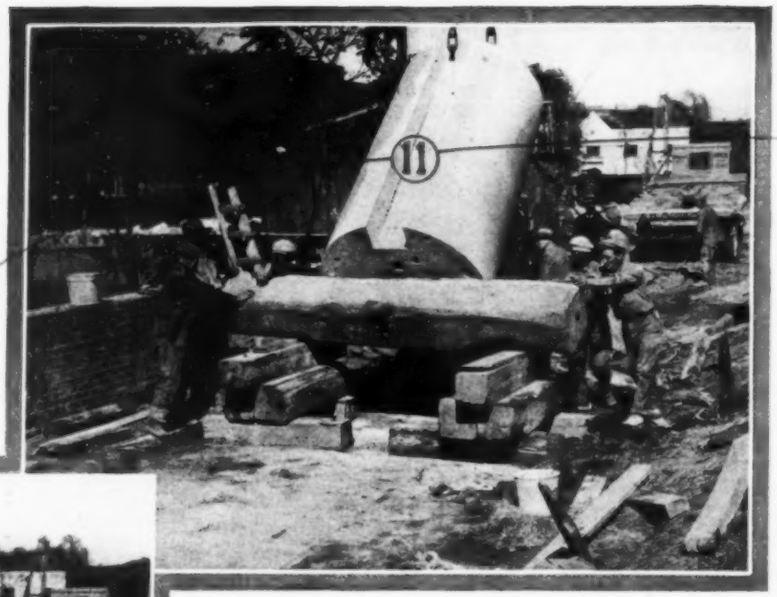


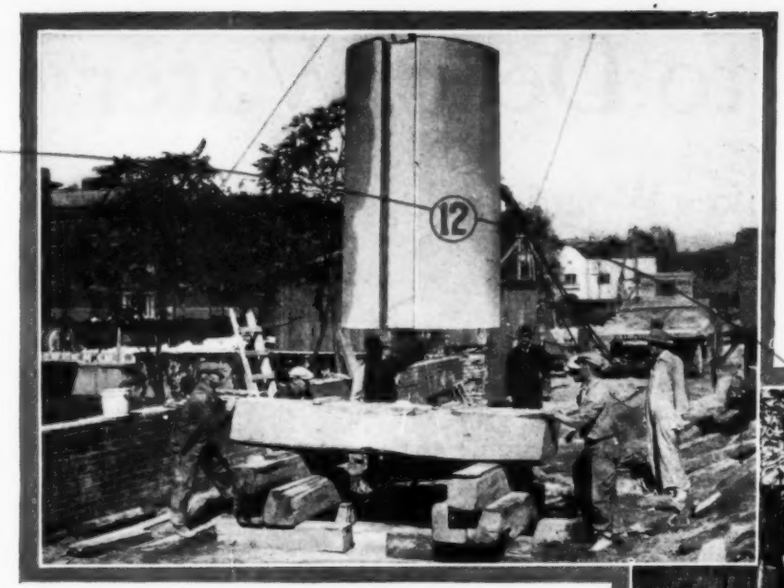
10. The edges of the tilting block are beveled to permit it to turn easily on the supporting timbers. There is enough friction between the block and the timbers to prevent any sliding as the drum is lifted

11. As the derrick lifts the upper end, the drum rolls into a vertical position

8. The stone is laid in a horizontal position, pin-connected to the tilting block and ready to be turned into the vertical

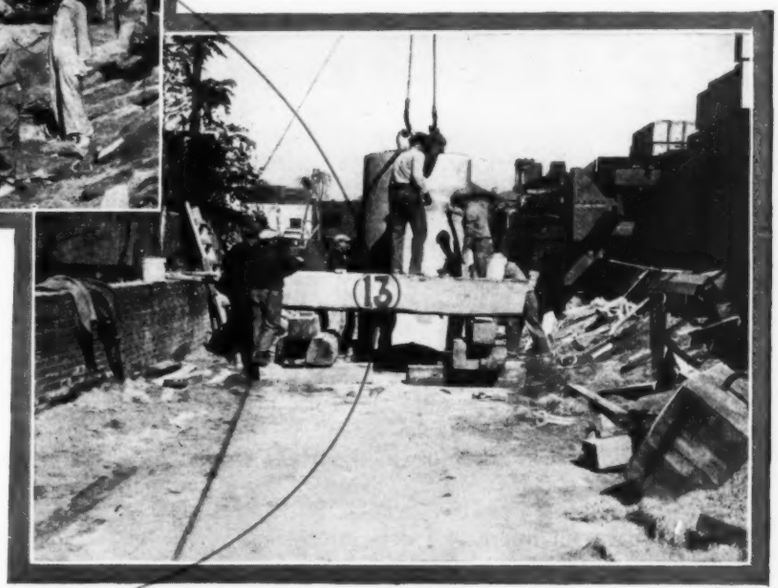
9. With the bridle hooks in the shackles, the signal is given for the first strain on the hoisting fall

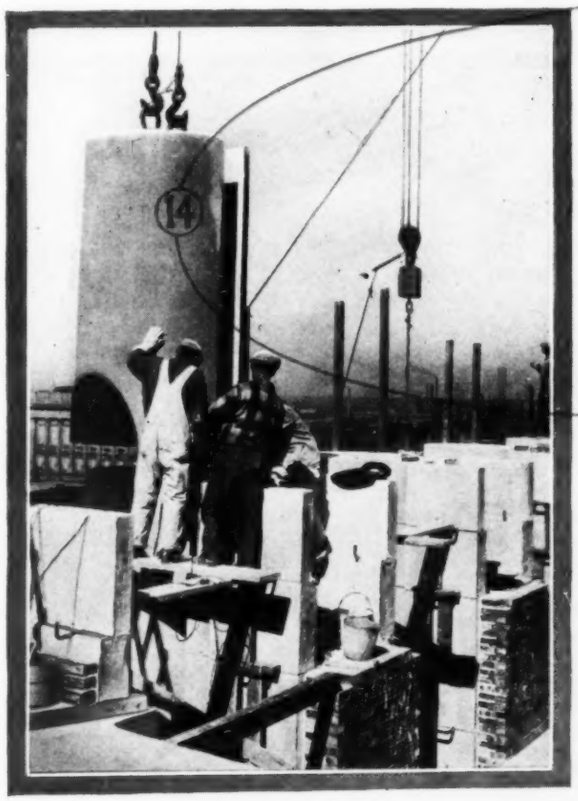
Follow the Red Line



12. The stone is raised to allow the block to drop from the pin and the pin from the hole

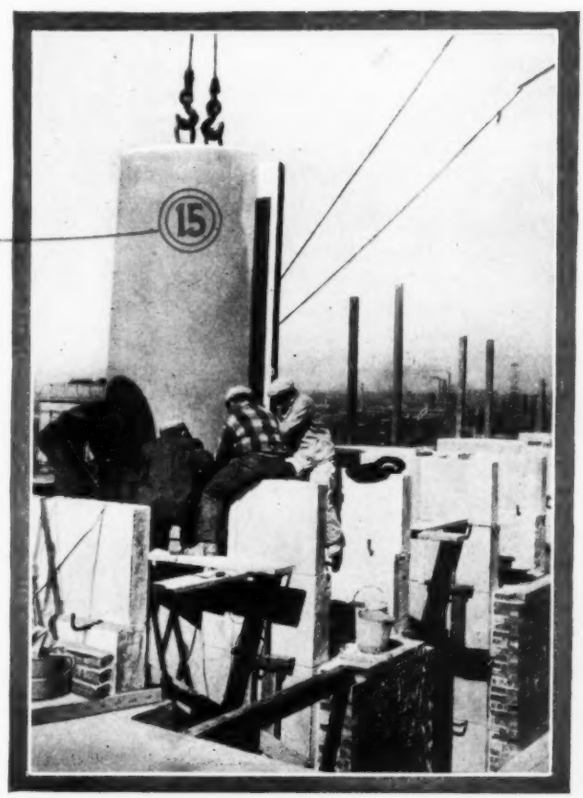
13. Before being lifted to its final position, the uncleaned part of the drum is gone over





14. Directions for setting the stone are telephoned to the hoist operator who is hidden away in a side room on the main floor

15. Straight-edges and levels are used to bring the stone to true position on the column



Getting Out to Deep Water

Ingenious Construction Takes Wharf to Edge of Channel

By G. W. Maker

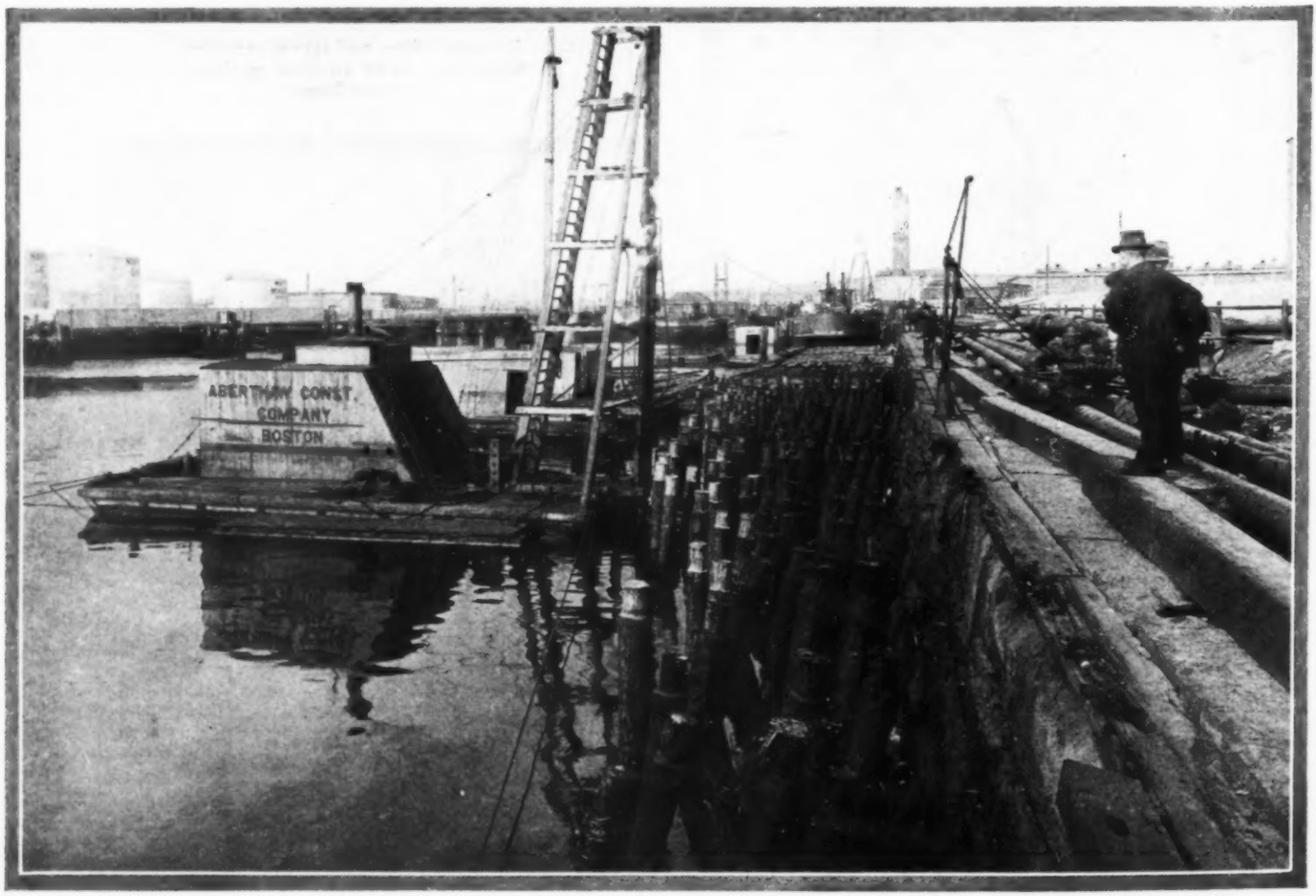
ONE of the large waterfront terminals of the Standard Oil Company of New York is located on Chelsea Creek in Boston Harbor. The capacity of this terminal, which receives all its supply from tankers, has for a long time been limited by the depth of water along the seawall, which was not sufficient to accommodate the large modern tankers of deep draft. It was desirable to obtain berthing space to the full 30-ft. depth of the adjoining channel, and studies were made of the different possible schemes for getting this depth. Dredging was out of the question, as the base of the existing heavy granite seawall was only 22 ft. below low water and rested on gravel without pile support. Dredging along this wall would undoubtedly have undermined it, and to have carried it down by underpinning would have been extraordinarily expensive. The most economical method was to construct a new dock out to the U. S. Pierhead line which practically paralleled the seawall 35 ft. away from it. The new wharf was therefore designed 35 ft. wide and 400 ft. long, with a 600-ft. berth dredged along its face to a depth of 30 ft.

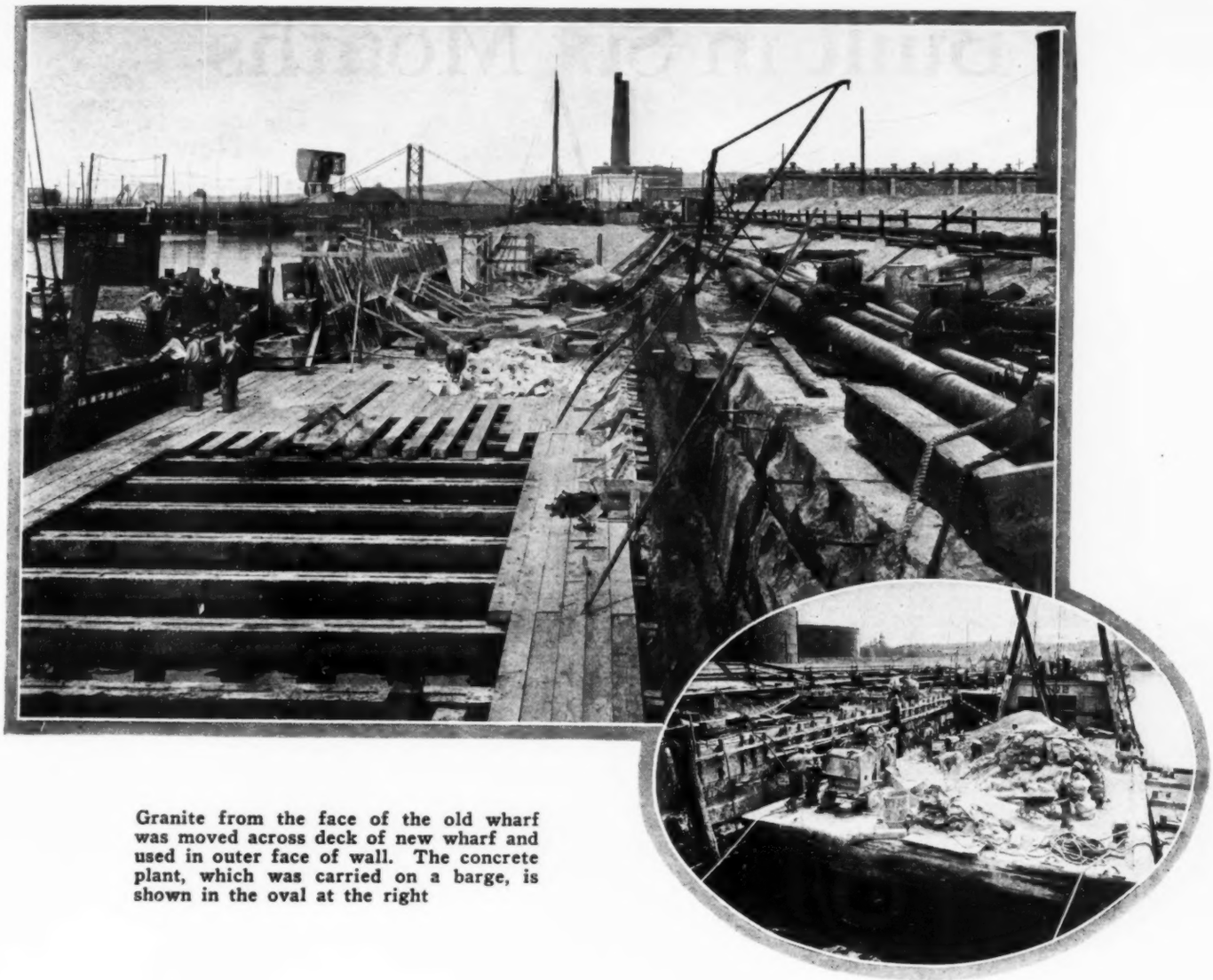
This wharf was of interesting design, consisting of a pile structure supporting a wooden deck at approximately mid-height between high and low water. A concrete and stone wall 10 ft. high along the outer edge of this deck retains a sand fill.

Wood piles 45 ft. to 55 ft. long are driven in bents to a minimum penetration of 20 ft. Bents are 6 ft. on centers with piles 2 ft. 6 in. on centers in each bent, which has a double cap of 6x12-in. timber bolted through the top of each pile. The three inner rows of piles are driven perpendicular to the battered face of the old wall, thus becoming spur piles in effect. Decking is 6x10 in. Douglas fir. The structure is heavily braced in both directions.

The new wharf is tied to the old granite wall by means of a 12x12-in. longitudinal stringer held to the granite blocks by bolts set in holes drilled 2 ft. on centers and anchored by combination lead and iron expansion washers. The timber cap of each pile bent is bolted to this longitudinal stringer. Because of the impracticability of getting a tight joint between the wood deck and the irregular granite, and as a further precaution against the sand fill washing down through, should this joint open, a concrete fillet was cast along the old

Driving wood piles, from 45 to 55 ft. in length, to support extension of wharf





Granite from the face of the old wharf was moved across deck of new wharf and used in outer face of wall. The concrete plant, which was carried on a barge, is shown in the oval at the right

wall and tied to the granite by bolts set in holes drilled 4 ft. on centers and cast in the concrete. This fillet rested on the new wood deck, but was separated from it by a thickness of heavy roofing felt to permit movement.

The construction required careful planning. It was particularly necessary that there should be no interruption in the operation of the plant and no interference with the constant arrival and departure of oil boats. Because the timber structure was completely submerged at high tide, the working time available was only on the lower half of the tide. Accordingly, when high tide occurred at midday, advantage was taken of low water both morning and evening.

The upper courses of the old granite wall were taken down and used again in the lower outer face of the new wall, thus giving a granite face to that section of the new wall exposed to sea water. As shown in one of the photographs, these blocks were first set in place and the inside battered form then set up to the full height. The outer form was carried down only to the top of the line of blocks.

The slope under the dock was riprapped, approximately 2,700 tons of stone being used for this purpose. Five thousand tons of sand fill were required.

Construction was carried out entirely by floating equipment, which was not only the most economical layout but was necessary, due to lack of working area adjacent to the dock. For the 500 yd. of concrete required, a 2-bag mixer with charging hopper was set on one corner of a lighter, and aggregate and cement delivered to the lighter by barge. The concrete was handled to the forms by the lighter, using a ½-yd. bucket.

This wharf was designed and constructed by the Marine Division of the Aberthaw Company of Boston.

CASH PRIZES *for* PHOTOGRAPHS

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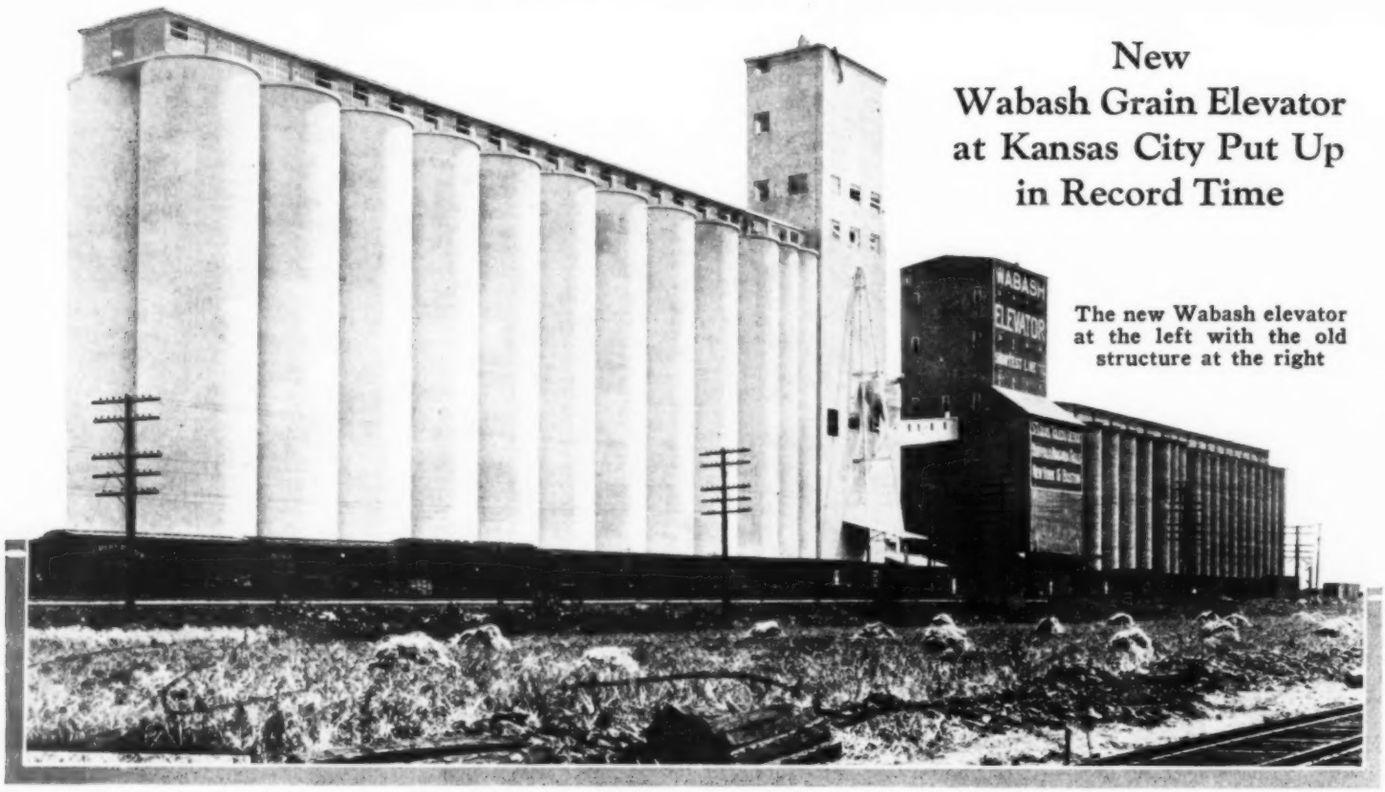
See Conditions on Page 22

Built in Six Months

New Wabash Grain Elevator at Kansas City Put Up in Record Time

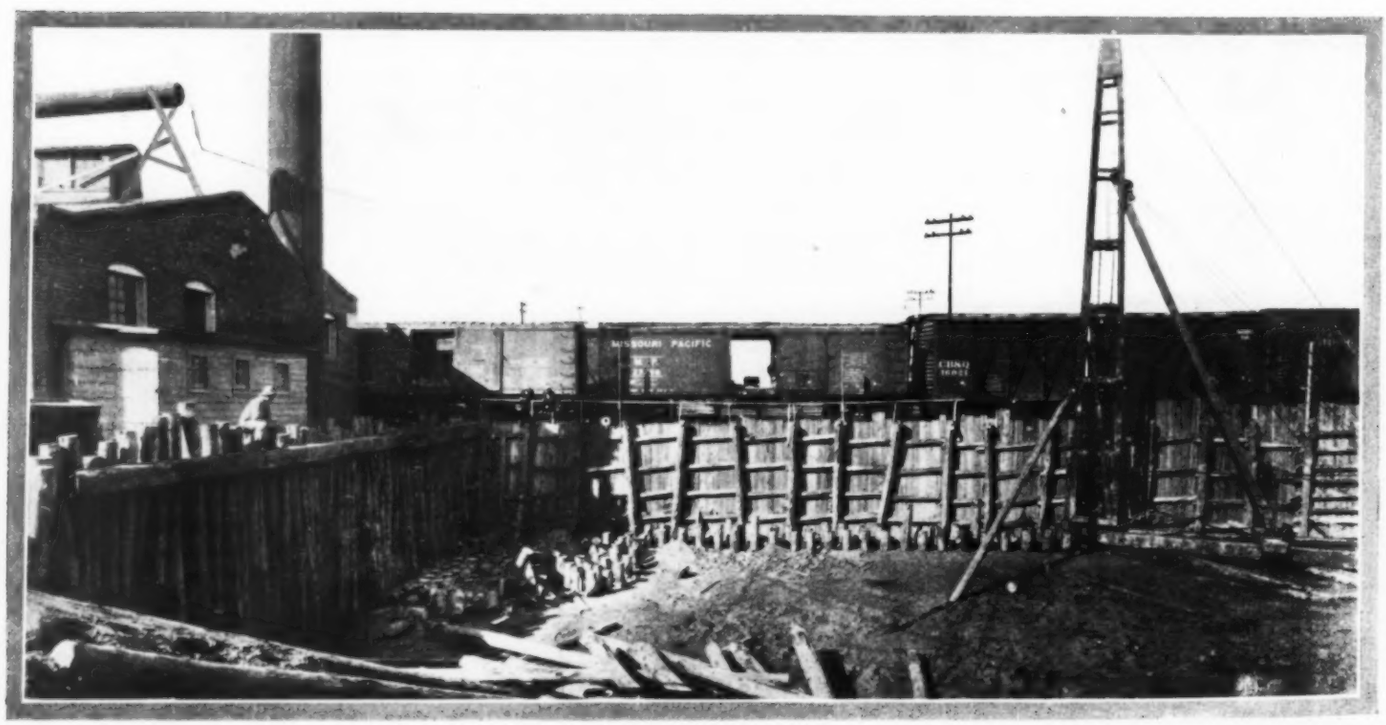


The new Wabash elevator at the left with the old structure at the right

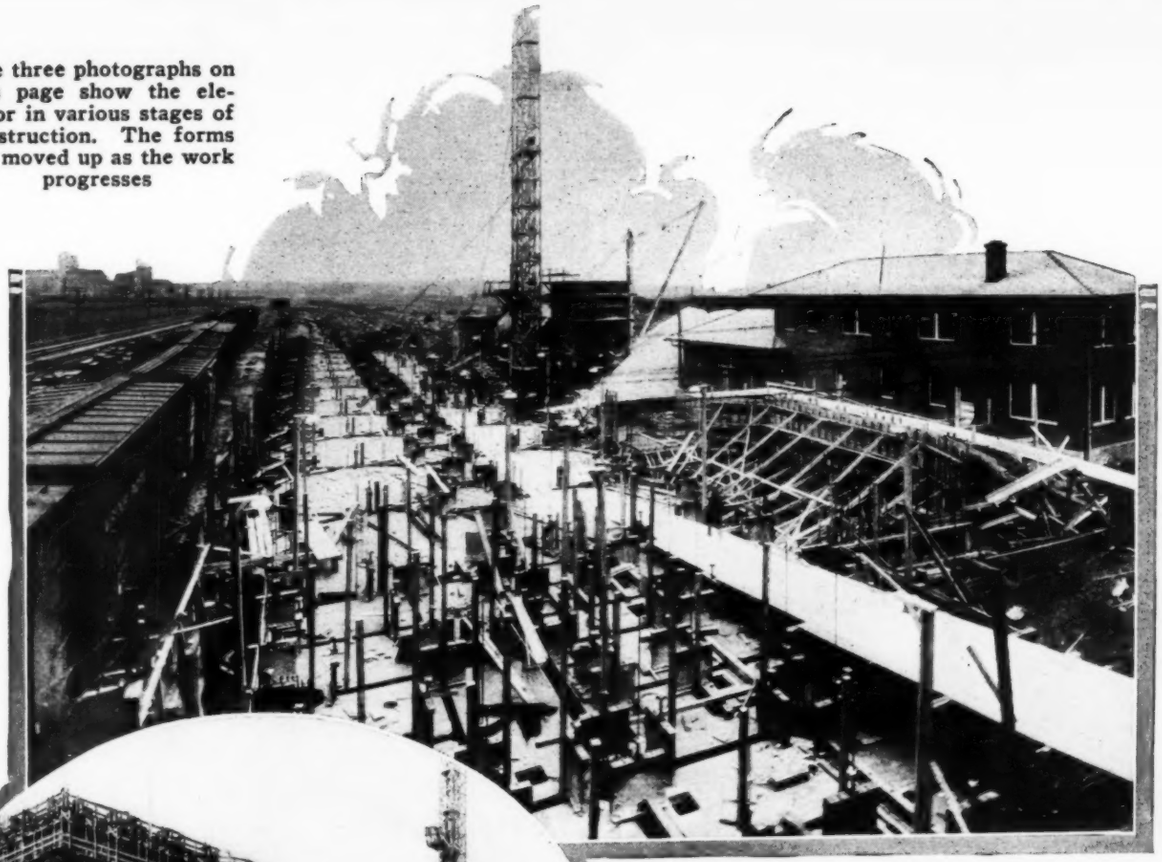
ONE of the notable construction jobs of 1927 was the building of a new grain elevator for the Wabash Railroad at Kansas City, Mo. This great concrete structure, which consists of a workhouse 195 ft. 4 in. in height and 22 cylindrical storage tanks, each 24 ft. 1½ in. in diameter and 118 ft. deep, was built in six months.

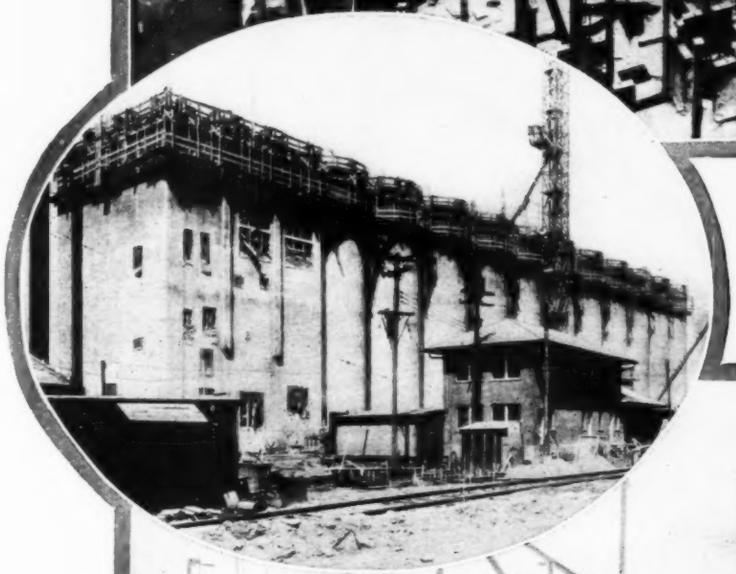
The grain elevator department of James Stewart & Company, Inc., of Chicago, of which W. R. Sinks is manager and T. D. Budd, engineer, handled the work. This organization, under the direction of Mr. Sinks, has been building grain elevators for many years and has not only developed a number of methods of construction for this sort of work,

Beginning the excavation. The sheathing in the background was anchored to deadmen beyond the railroad tracks

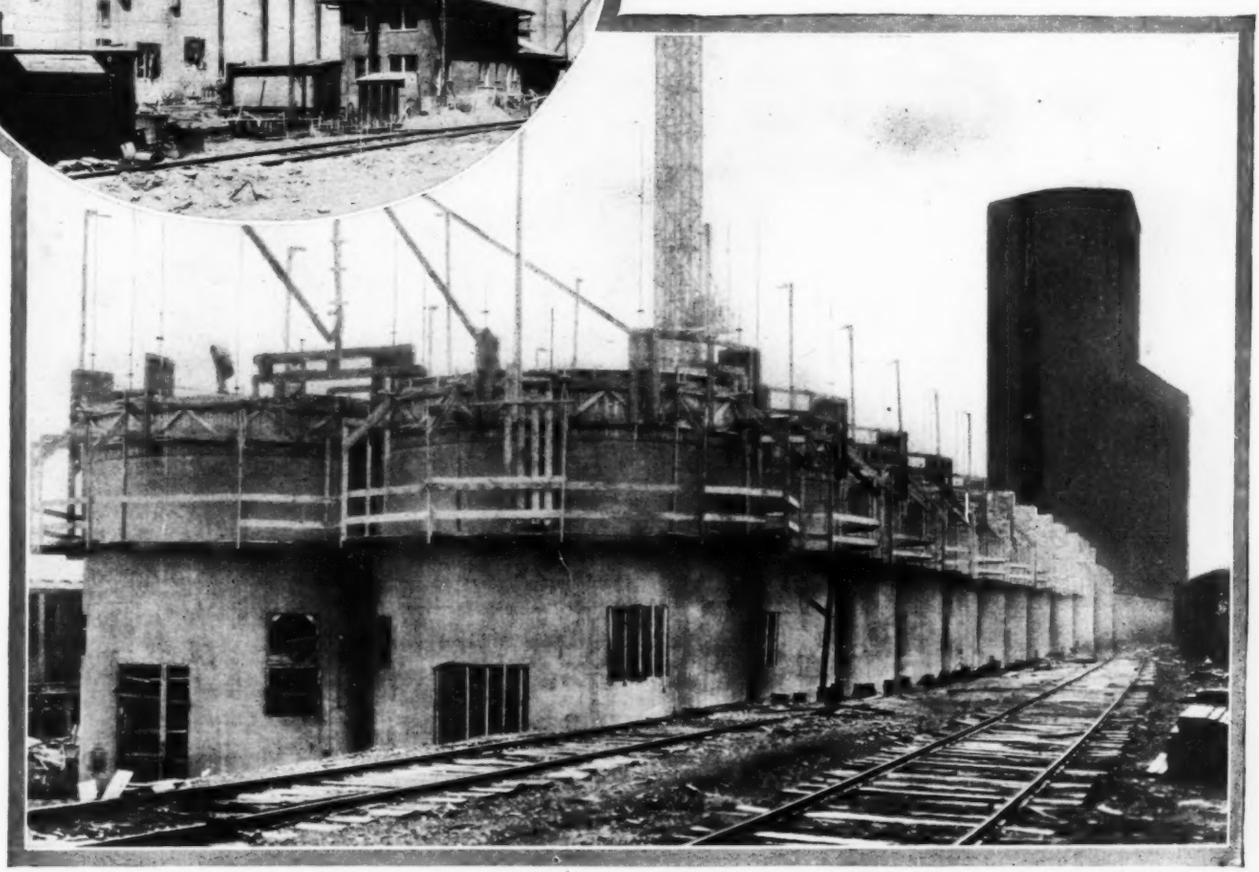


The three photographs on this page show the elevator in various stages of construction. The forms are moved up as the work progresses



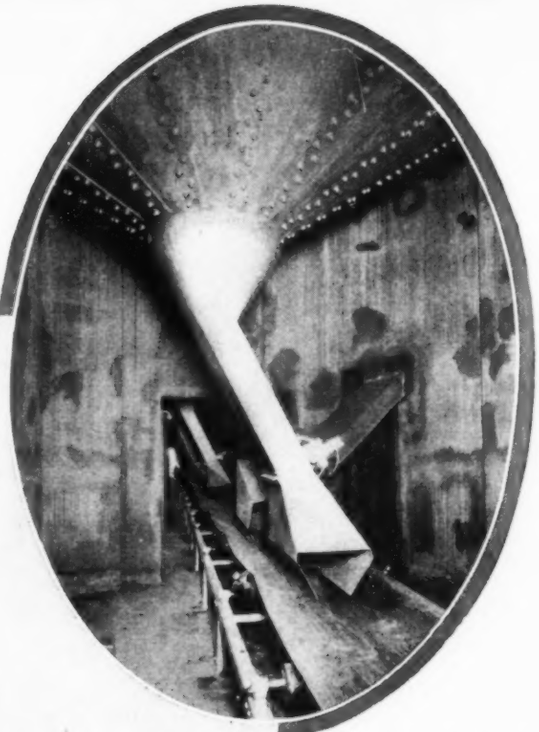


but has done a great deal to improve the design of grain elevators. The elimination of dust by the simple means of eliminating the places in which dust may collect has been a hobby with Mr. Sinks, and the new Wabash elevator is so designed that



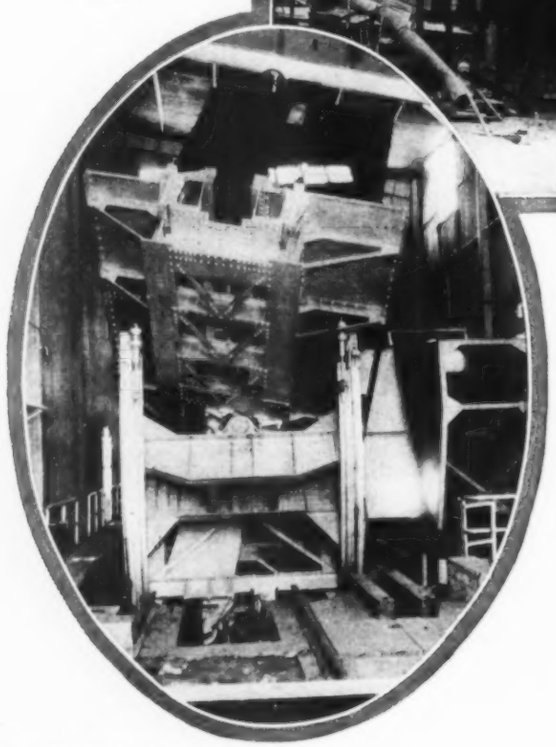
grain dust will be reduced to a minimum. Inasmuch as the greatest peril to a grain elevator is the danger of a dust explosion, the necessity for keeping the amount of dust as small as possible is self-evident. What dust does collect is removed by the Budd-Sinks dust prevention equipment.

The new building supplements the old Wabash elevator which was begun in 1913 when a wood workhouse with 8 concrete tanks was built. About nine years later the number of tanks was increased to 77, but greater capacity was needed, so the new elevator was added to the plant.



Above — Grain is handled on belt conveyors. The photograph shows a spout which discharges grain from the bin above on the conveyor belt

Below—The car unloader in action. It tips an ordinary box car so that the grain runs out the side door

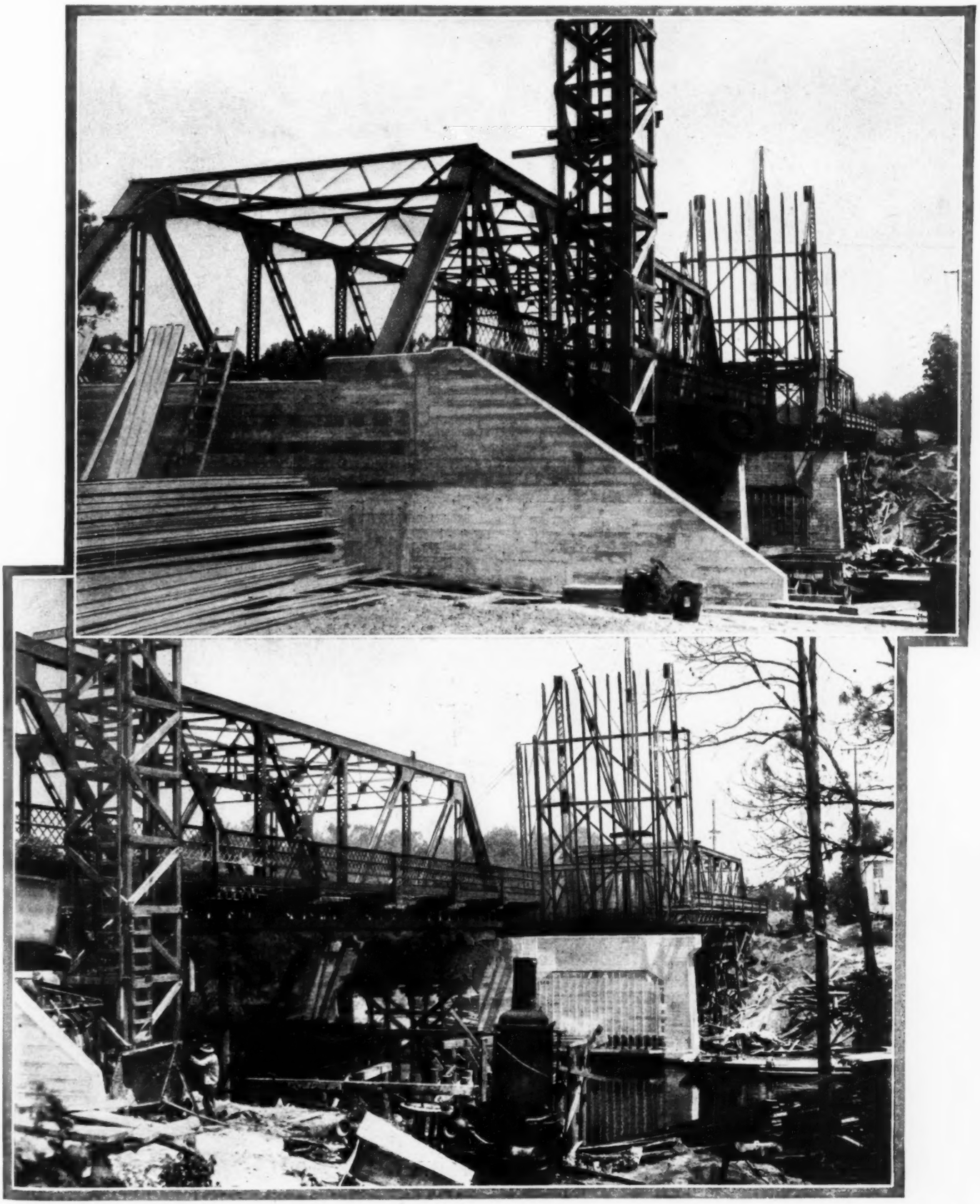


In the construction of the new building a difficult problem was encountered at the outset when the excavation for the foundations was begun. The material was such that it was necessary to drive wood sheathing and to anchor it in place by bolts carried under the Wabash railroad tracks and secured by deadmen beyond the tracks. This sheathing is shown in the photograph at the bottom of page 32.

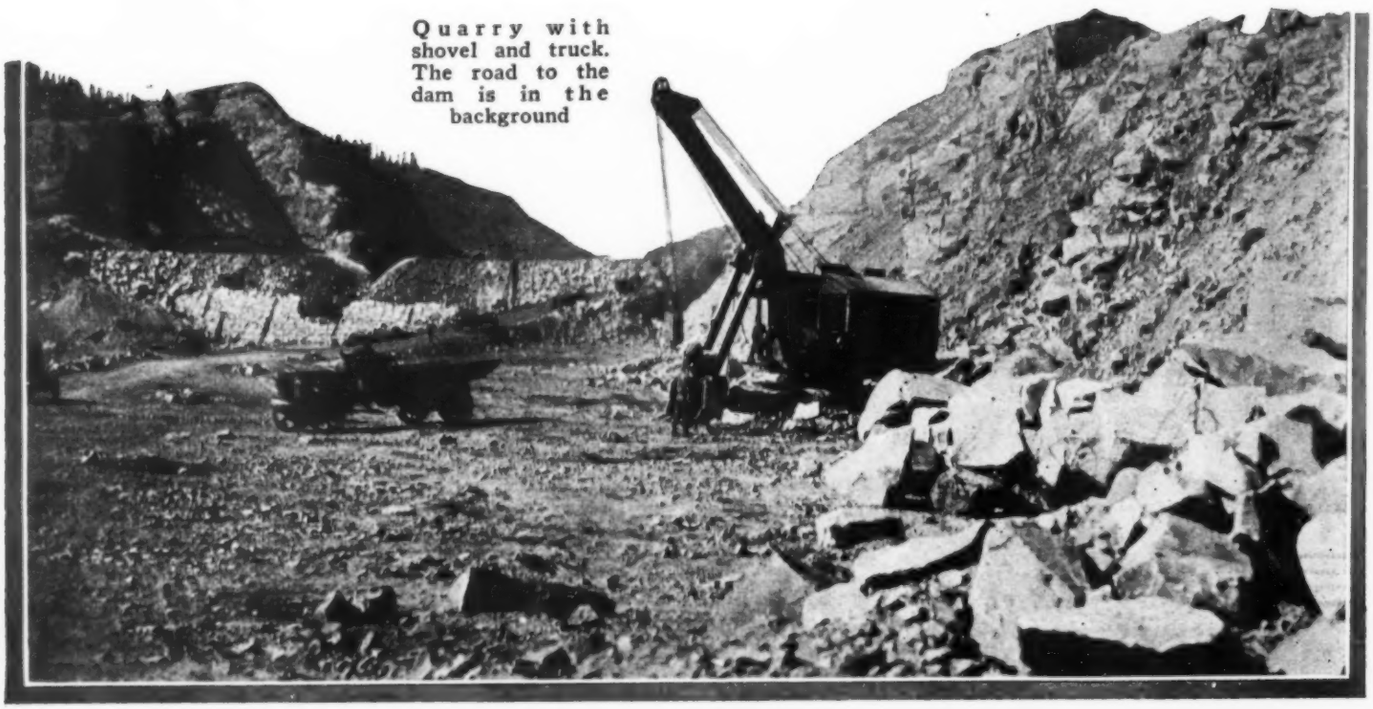
The actual construction of the tanks was handled by movable forms which were developed by Mr. Sinks more than 20 years ago. Work was carried on regardless of the weather. The concrete was distributed by the tower and chute method. The new elevator, in addition to being the last word in design, is provided with the most modern grain handling equipment, including a car unloader built by the Link-Belt Company. This machine handles a box car and tips it in various directions so that the grain runs out the door. It can handle about eight cars per hour.

Bascule Span Crosses Houston Ship Channel

The cover of this issue of *Construction Methods* shows a bridge under construction at Houston, Tex. It was built by the Kansas City Bridge Company for the municipality and carries 69th St. across the ship channel. Considerable difficulty was encountered in the construction of the concrete piers and abutments. The north pier, which carries the weight of the 116-ft. bascule span, is supported by 241 timber piles 35 to 40 ft. in length. J. C. McVea city engineer, is in general charge of the work.



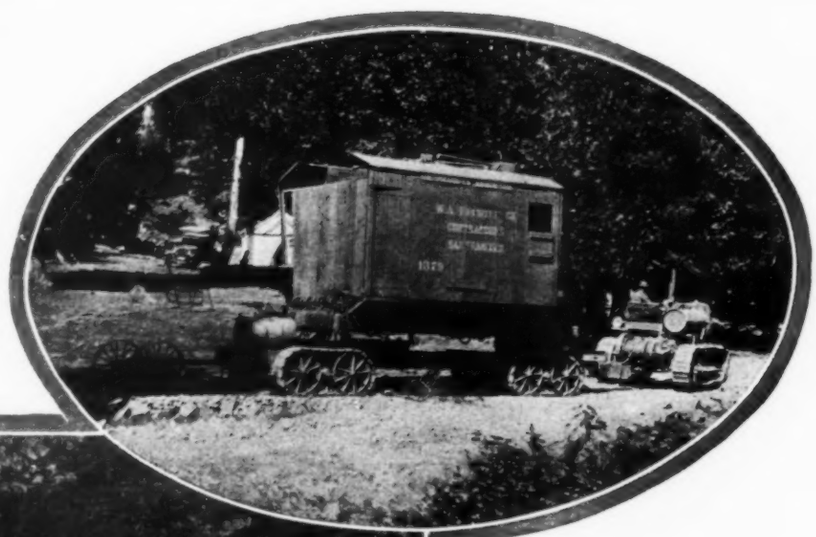
Motor Trucks Handle Heavy



Quarry with shovel and truck. The road to the dam is in the background

ONE of the unusual construction jobs completed during 1927 was the building of a rock fill dam containing 316,000 cu.yd. of material with eight 5-ton trucks as the backbone of the contractor's plant. This dam, which replaces an old rock fill dam built in 1876, and containing about 50,000 cu.yd. of material, was constructed by the W. A. Bechtel Company of San Francisco.

Much of the material from the old dam was loaded on the trucks and hauled a short distance to form part of the new structure. The new dam is 167 ft. high and was built in four lifts of

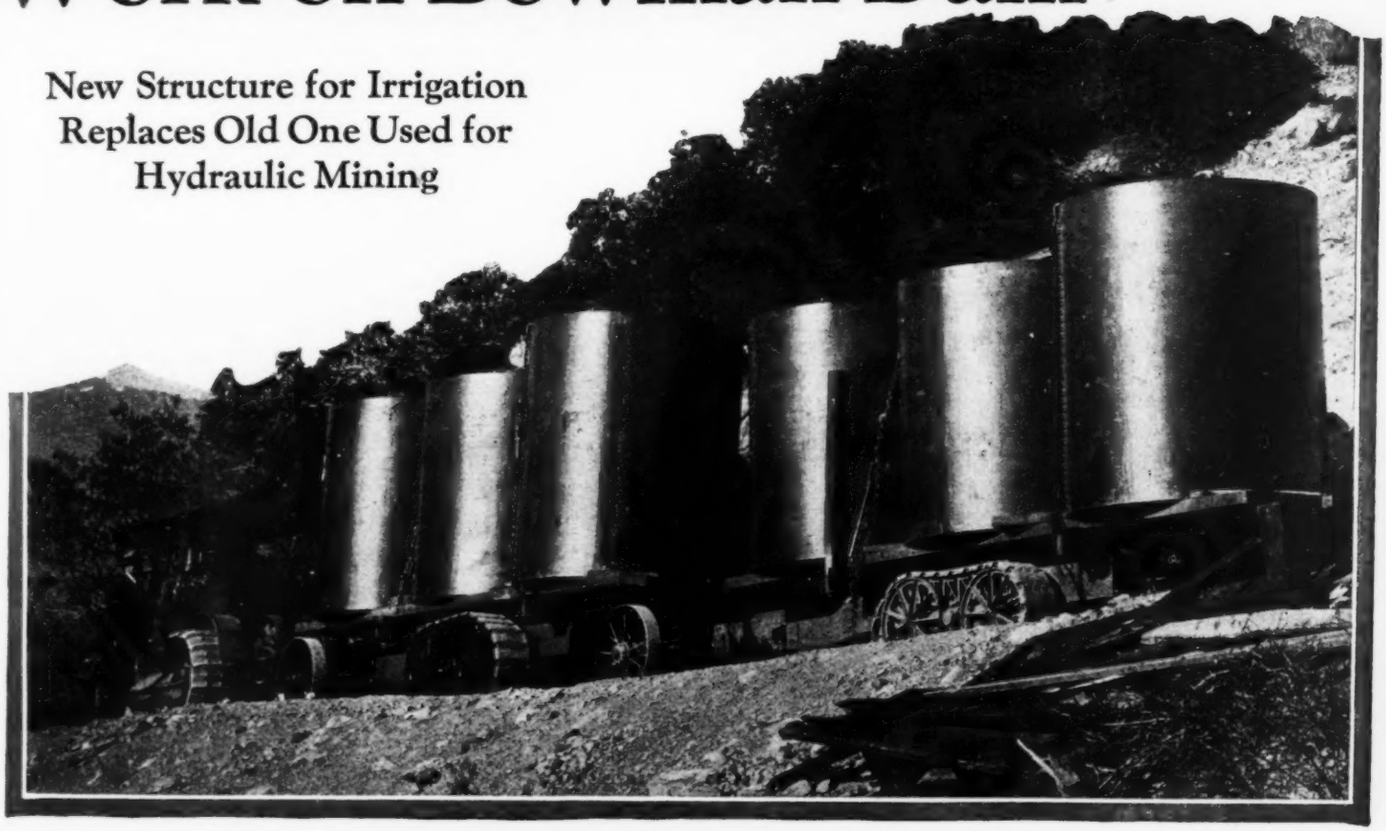


Above — Hauling an Osgood shovel to the site of the work with a Caterpillar tractor

At left—A general view of the dam. Trucks are dumping from both sides, cranes are setting stone on face of dam and streams of water are consolidating fill

Work on Bowman Dam

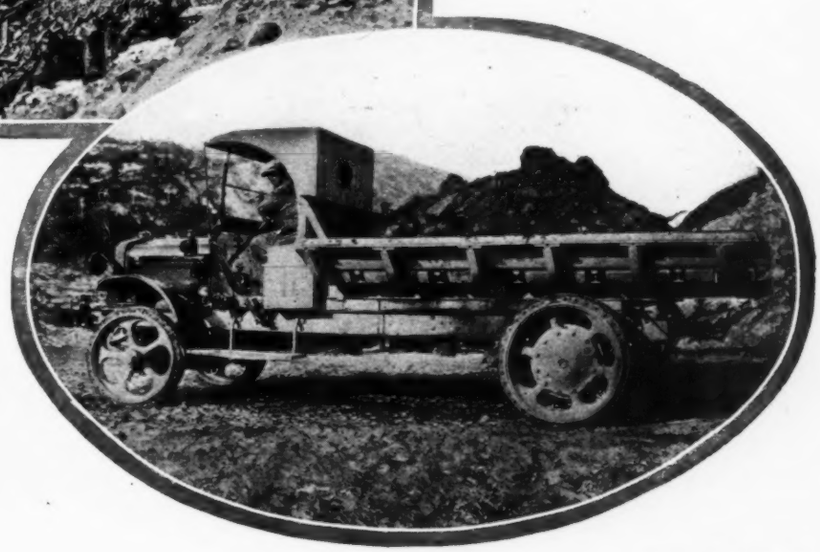
New Structure for Irrigation Replaces Old One Used for Hydraulic Mining



Above — Six sections of the steel penstock were hauled in as one load

Above—Shovel removing the old dam. Much of the material was used in the new structure

Below — A special truck body was designed by the contractor for handling the heavy material



30 to 40 ft. each. Special all-steel bodies, designed by the contractors, were used on the eight trucks which did the heavy work. Two rock quarries were opened, one on each hillside below the downstream face of the dam. Trucks hauled from these quarries and dumped from the end of each lift as far as it was completed.

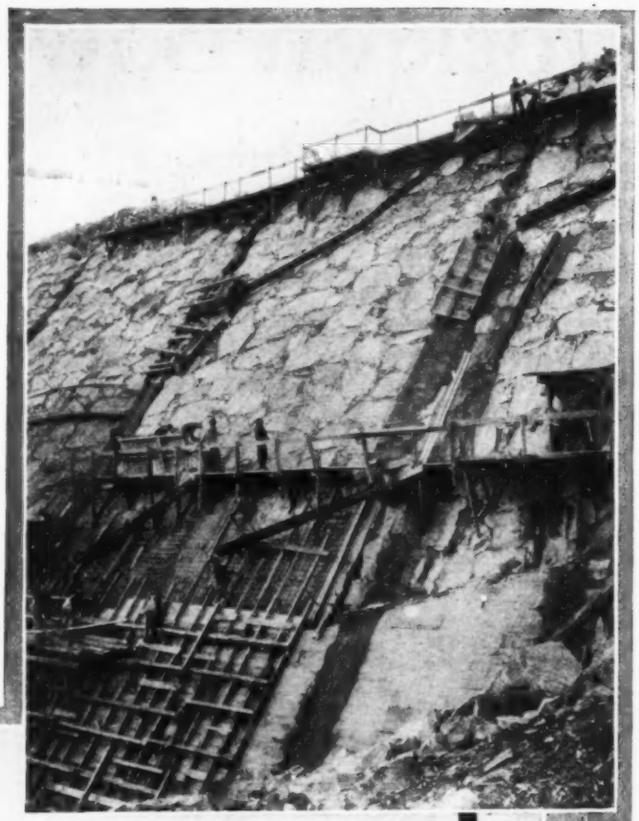
Two cranes worked along the face of the dam setting about 27,000 cu.yd. of rock which had to be carefully placed. Streams of water were

kept constantly playing on the freshly dumped rock washing away the loose material and consolidating the fill.

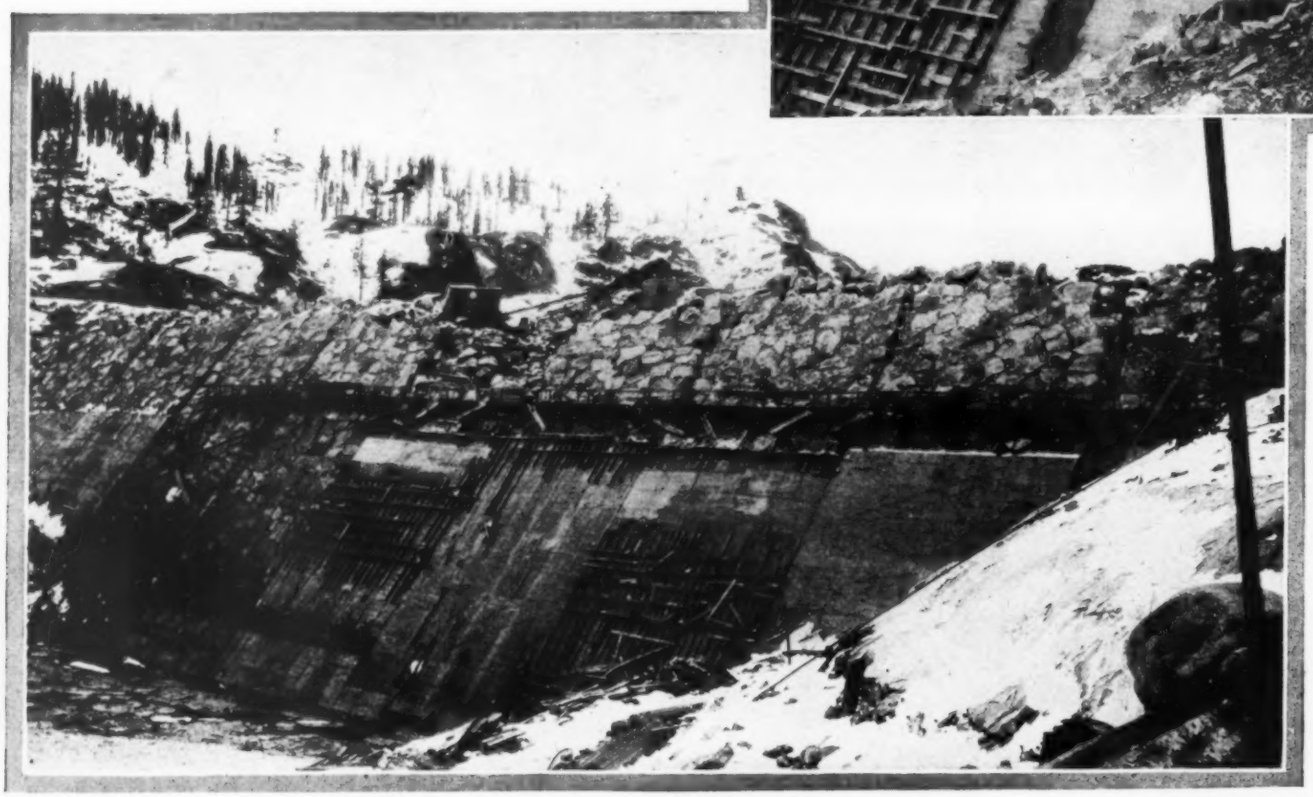
The dam was faced with concrete with an average thickness of 15 in. and an area of about 75,000 sq.ft. Runways were built along the face of the dam over which buggies were pushed to chutes leading to the forms. Expansion joints were used about 30 ft. apart. Trenches constructed in the derrick-placed rock face underneath these joints also were filled with concrete.

The materials which were not found on the site had to be brought in over a rough road 17 miles in length. Two Caterpillar tractors were used for this purpose, one of the biggest jobs being the hauling of the steel sections for the penstock. Two trailers were used, each carrying three sections which were rigidly attached to the trailers by heavy chains. One tractor had no difficulty in hauling this load.

The new dam, which is known as the Bowman Dam, is in Nevada County and is part of the Nevada Irrigation District which includes two dams, five tunnels and numerous canals and structures. A bond issue of $7,250,000 is furnishing the necessary funds. Fred H. Tibbets was the chief engineer



At right — Pouring trenches underneath expansion joints



Below — Crane setting rock in face of dam during the winter

and J. W. Scott was resident engineer. Work on the job began in March, 1926.

The outlet tunnel, about 650 ft. in length, was driven through a hillside around the dam. Its cross-section is about 6 ft. by 6 ft. with an arched roof. The part next to the steel penstock which leads to the outlet valves is lined with reinforced concrete.

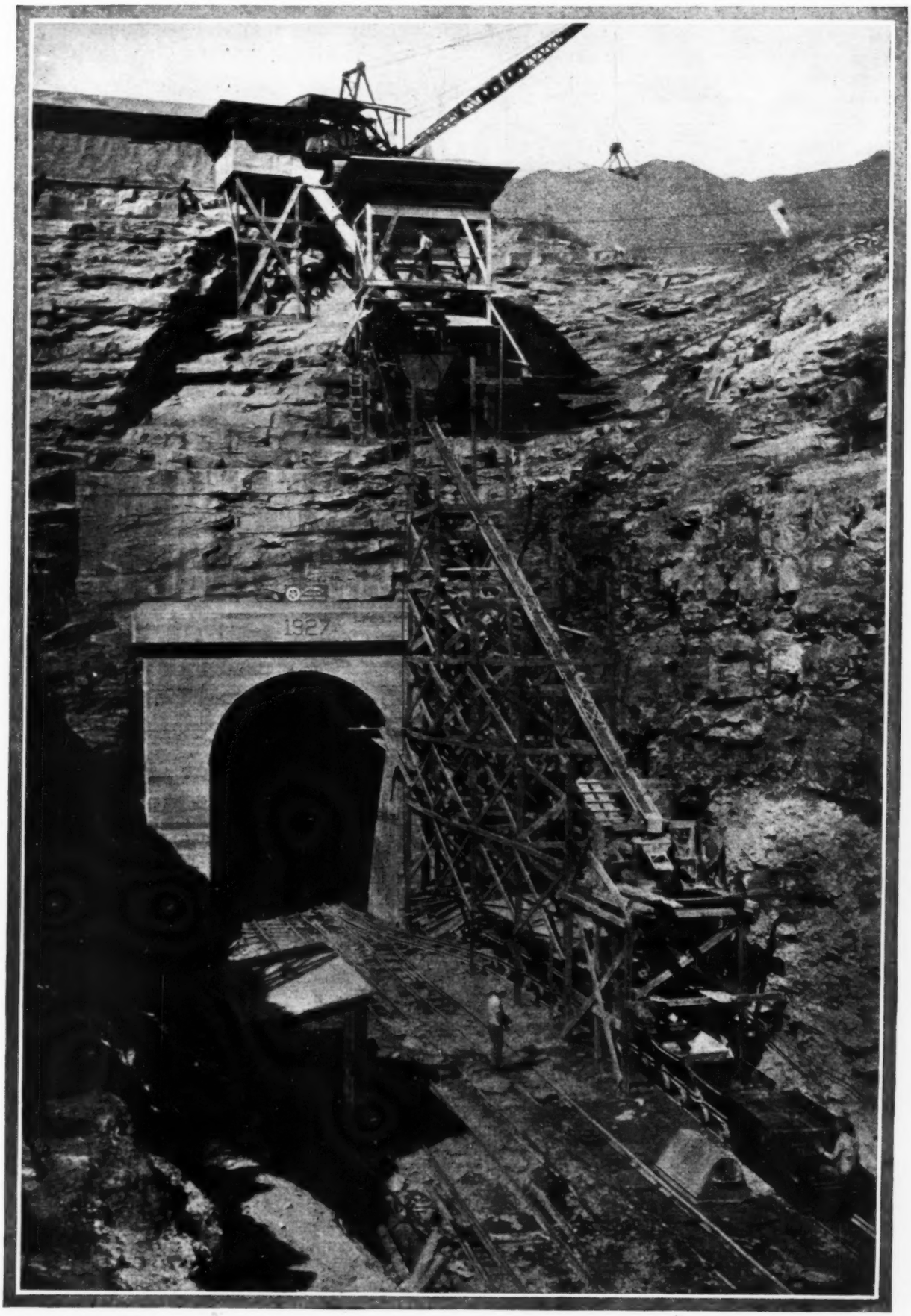
Of the 316,000 cu.yd. of rock in the dam, approximately 289,000 cu.yd. were dumped by the fleet of eight trucks, the remainder being placed by the cranes. This fleet of trucks was composed of six 5-ton Sterlings and two 5-ton Whites. Seven smaller trucks, of from ¾ to 2-ton capacity and including Grahams, Sterlings, Whites and Fords, were used on other parts of the work. The crest of the new dam is about 700 ft. in length and about 15 ft. wide. The contract price was approximately $662,000, and about 150 men were employed on the work.

Other equipment used on the work were Bucyrus, Osgood and Northwest shovels and cranes and Ingersoll-Rand air equipment, including one portable compressor and one stationary compressor. Three Jaeger mixers handled the concrete. The job was equipped with an electric lighting system which made it possible to work at night whenever necessary. All of the equipment on the job was owned either by F. C. Sewell or by the W. A. Bechtel Company.

The old dam, which was built for hydraulic mining purposes, was one of the oldest of its type in California. A rock set just above the outlet sluice of the old dam carried the date of its construction.

The Picture Tells the Story

This well-arranged plant is providing concrete for lining a tunnel on the Edgewood Cutoff of the Illinois Central in southern Illinois. The work is being done by A. Guthrie & Company, St. Paul, Minn. The photograph was taken by W. R. Blakely



NEW EQUIPMENT ON THE JOB

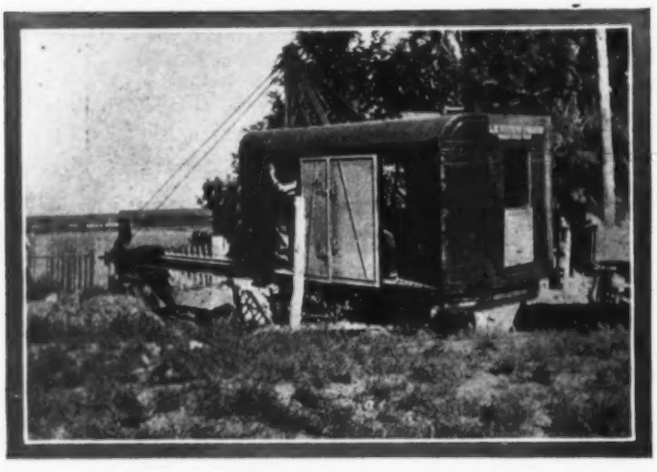
To Take Out High Spots

A concrete surfacing machine is now being sold by the Concrete Surfacing Machinery Company of Cincinnati. The machine in the photograph was at work on a road job in Tennessee where it was being used to take the high spots

off the new pavement. The cutting action of the machine is rapid, and the stone and sand ingredients of the concrete were cut off instead of being torn out. The result was a smooth surface even when the cut was deep enough to expose the stone.

A New Excavator

Tearing up an old hand-laid rock pavement in Santa Fe, N. M., was the job on which L. D. Whitman & Company of

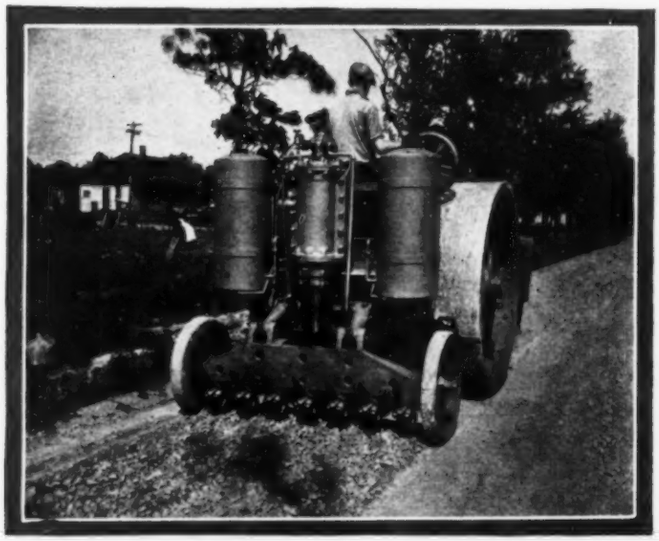


Wichita Falls, Tex., tried out its new Speeder Skimmer Scoop, a machine recently put on the market by the Speeder Machinery Corporation of Cedar Rapids, Iowa. The features of the skimmer scoop are high and low speed on the drums as well as on traction, a patented bucket trip, a traction lock and a bucket that dumps from the back instead of the bottom.

The back dump feature is made possible by placing the pivots near the top of the bucket instead of near the bottom, thus giving greater dumping clearance than can be obtained with a bottom dump. This eliminates the hinge on the bottom at a point where the load is greatest. The skimmer scoop is full revolving giving a wide working range and enabling it to load wagons and trucks from the rear.

Operator Has Clear View

A new roller, christened the Austin Autocrat, has been brought out by the Austin-Western Road Machinery Company of Chicago. The machine has been so designed that the operator has an unobstructed view both to the front and to



the rear. One of the features of the machine is the duplex worm gear drive. The roller shown in the photograph is equipped with a scarifier. It is a ten-ton machine with a four-cylinder gasoline motor and is owned by the city of Beacon, N. Y.

It is claimed that the worm gear drive will provide transmission which will not need as much attention as other forms. It also will make possible immediate speed reduction and will run quietly and free from unpleasant vibration.

The life of the worm gears is insured by the method of combined splash and force feed lubrication. The gear case holds 10 gal. of oil which is ample for lubrication by this method.

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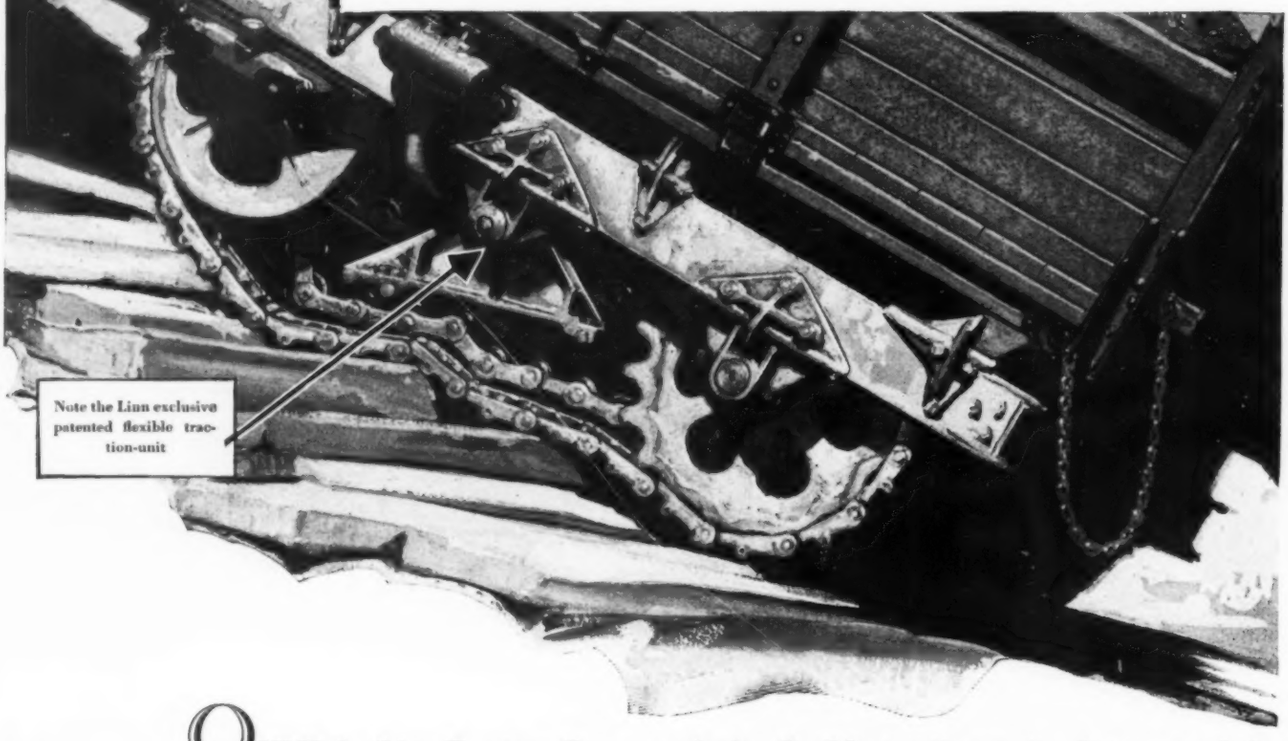
LINN PATENTED TRACTION—FLEXIBLE



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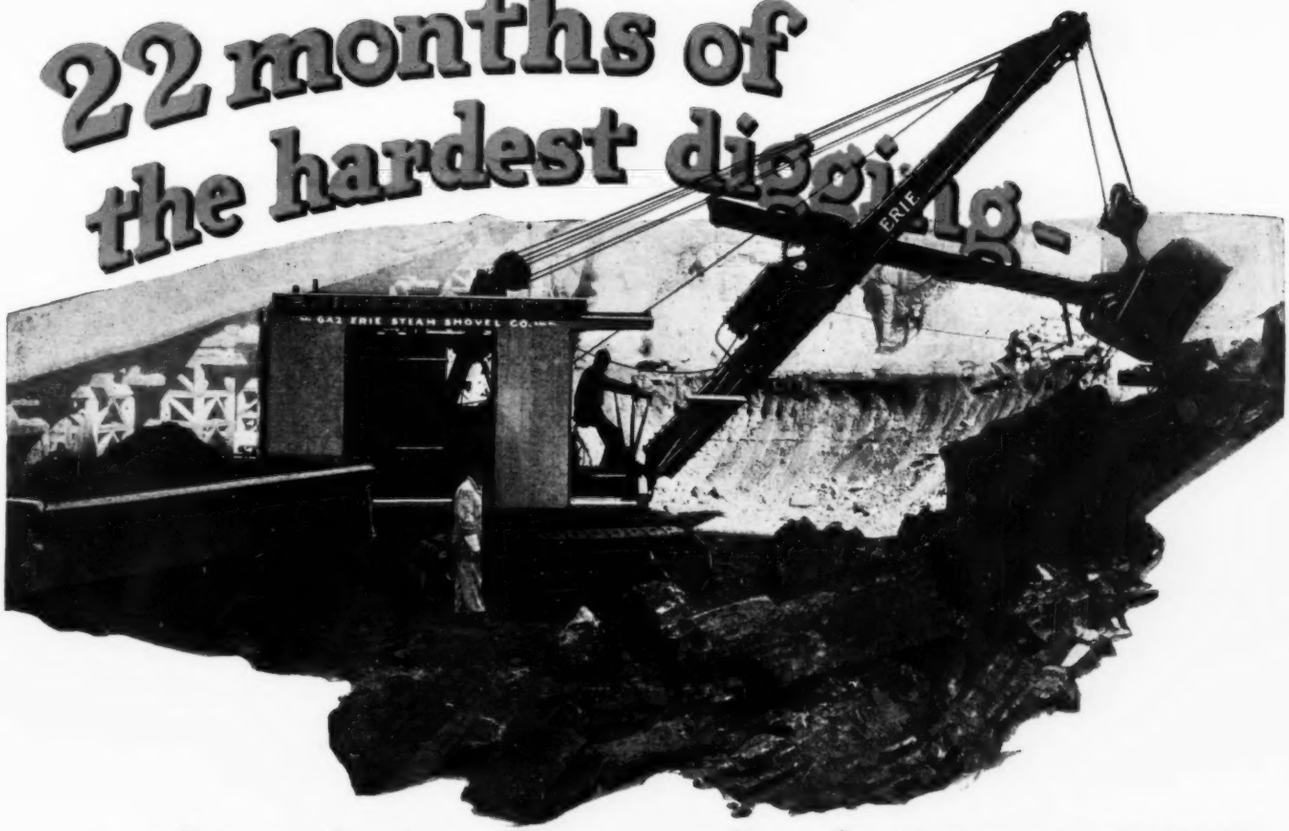

—then Ariss-Knapp Co., Oakland, Calif., bought another Gas+Air ERIE

and now they buy their third

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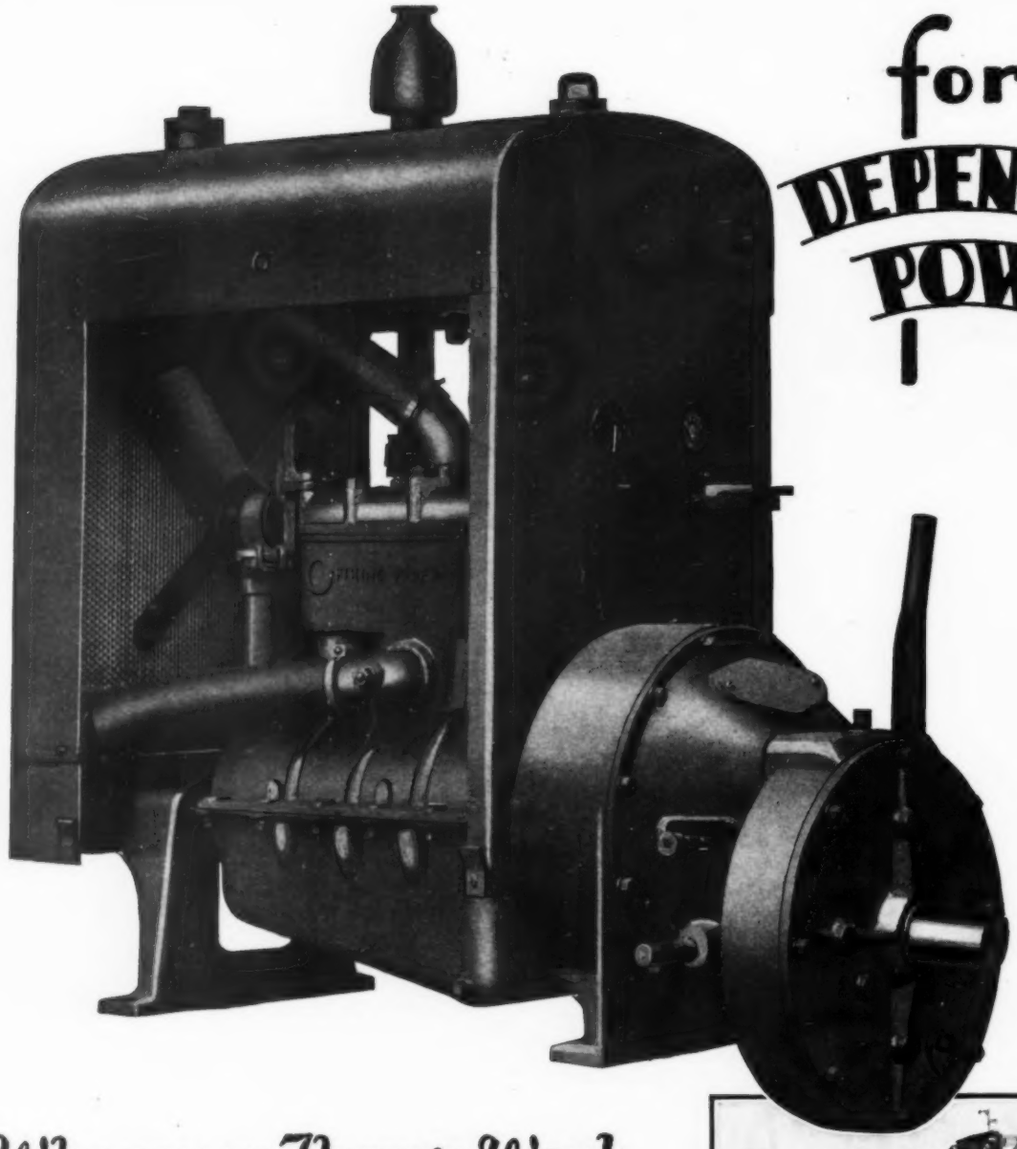
GAS+AIR ERIE and Steam DREADNAUGHT

SHOVELS, CRANES, DRAGLINES, ETC.

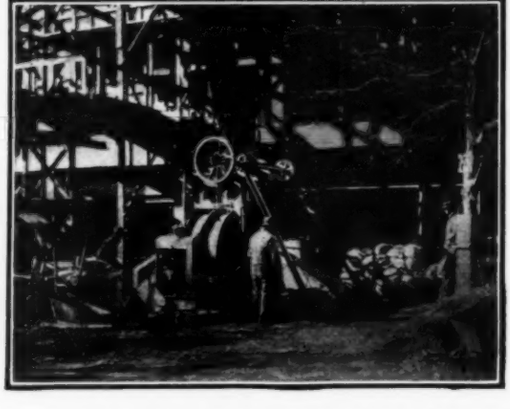


for DEPENDABLE POWER

Wherever There's Work

—you invariably find the Le Roi Engine on the job. Whether it's keeping the mixer drum humming or a saw rig buzzing — it gives the same dependable, low-cost power.

To distinguish itself in its field — Le Roi boasts of an unparalleled record — the lowest operating cost per day and year. Look to Le Roi for dependable power.



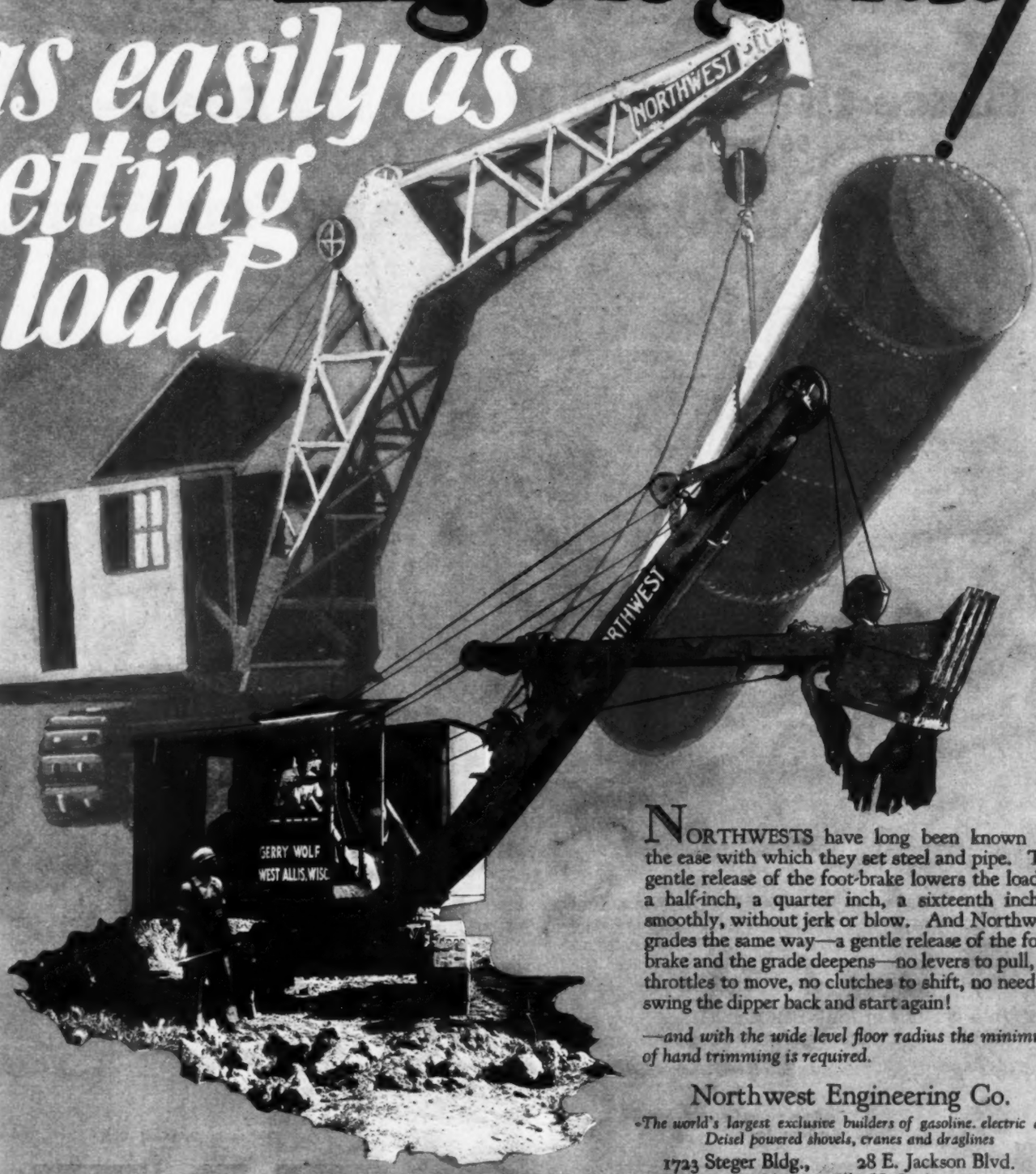
LE ROI COMPANY

Milwaukee, Wis.

LE ROI ENGINES

3 *to* 160 HORSE POWER

Holding the grade as easily as setting a load!



NORTHWESTS have long been known for the ease with which they set steel and pipe. The gentle release of the foot-brake lowers the load—a half-inch, a quarter inch, a sixteenth inch—smoothly, without jerk or blow. And Northwest grades the same way—a gentle release of the foot-brake and the grade deepens—no levers to pull, no throttles to move, no clutches to shift, no need to swing the dipper back and start again!

—and with the wide level floor radius the minimum of hand trimming is required.

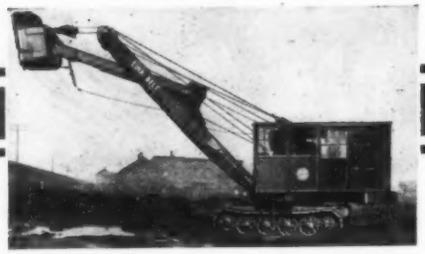
Northwest Engineering Co.

The world's largest exclusive builders of gasoline, electric and Deisel powered shovels, cranes and draglines

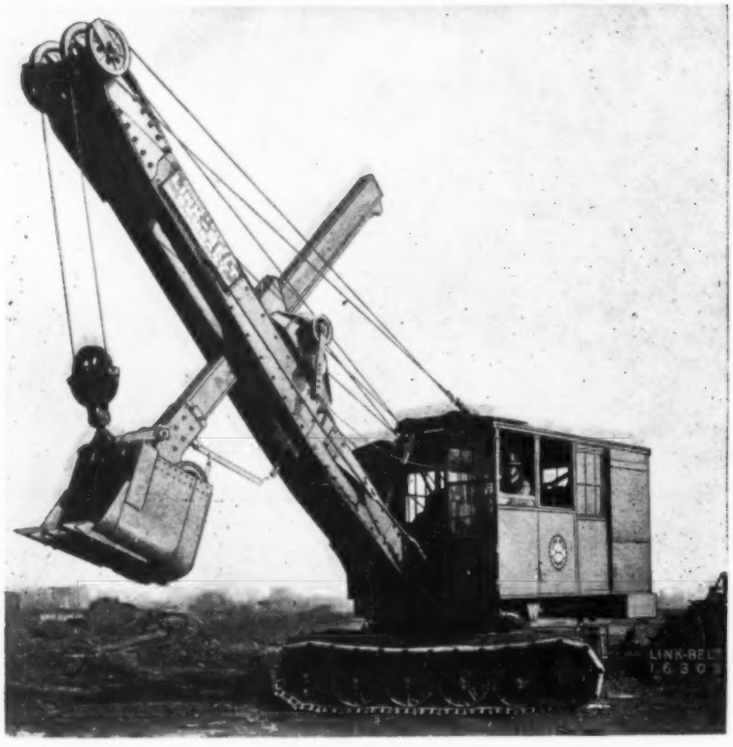
1723 Steger Bldg., 28 E. Jackson Blvd.
Chicago, Ill., U. S. A.

NORTHWEST

GM18-Gray



Since the World Began It's Been— "PERFORMANCE" —We Are Willing to Leave it That Way



Visit our Booth at the Road Show, Cleveland, Ohio Jan. 9-13, 1928

ALL claims to leadership bow to the actual records of "Performance". Among the users of Link-Belt Shovels you will find performance records that will quickly indicate the possibilities which one will offer on your work.

Into our line of Link-Belt Shovels we have put all the experience and skill of our designers; employed all the superior manufacturing facilities of our modern shops. They are the best shovels we know how to build.

Are these the reasons why their performance has earned such nation wide acceptance by those who handle materials? Send for Catalog No. 895.

Some territories still open for Agents. Get our proposition.

3154

LINK-BELT COMPANY

Leading manufacturers of Elevating, Conveying, and Power Transmission Machinery

CHICAGO, 300 W. Pershing Road — Offices in Principal Cities

LINK-BELT SHOVEL

Results Are What Count

The real value of wire rope is not in what it costs, but in what it does.

"HERCULES" (Red-Strand) Wire Rope is sturdy. It does not depend on strength alone for its dependability, for it is also extra tough and extra wear-resisting.

Made in both the Round Strand and the Patent Flattened Strand constructions. Tell us how you use wire rope and we shall be glad to suggest the right construction for best results.

Made Only By

A. Leschen & Sons Rope Co.

Established 1857

5909 Kennerly Avenue

ST. LOUIS

New York
Chicago

Denver
San Francisco

Visit us at the American Road Show in Cleveland

THE INSLEY EXCAVATOR

for SHOVEL · DITCHER · CRANE
SKIMMER AND DRAGLINE WORK

Highway Department Recognition

THE Department of Highways of the Commonwealth of Pennsylvania have an Insley Excavator. Recognition from such a source proves that the Insley is generally considered of unusual value for specific purposes in highway maintenance, which consideration is borne out by the fact that many other state highway departments, among which are Ohio, California and Oregon, own and operate Insleys, as well as innumerable counties, townships, cities and other bodies having charge of road maintenance.

What is good for the highway department is also good for the contractor who does work for the highway department. Speed and ease of handling, ample power, rugged sturdiness, economy of operation and low first cost make the Insley invaluable for road and street work, highway maintenance, ditching, bridge abutment excavation, and a dozen other jobs which confront you during the average season.

DITCHER

SKIMMER

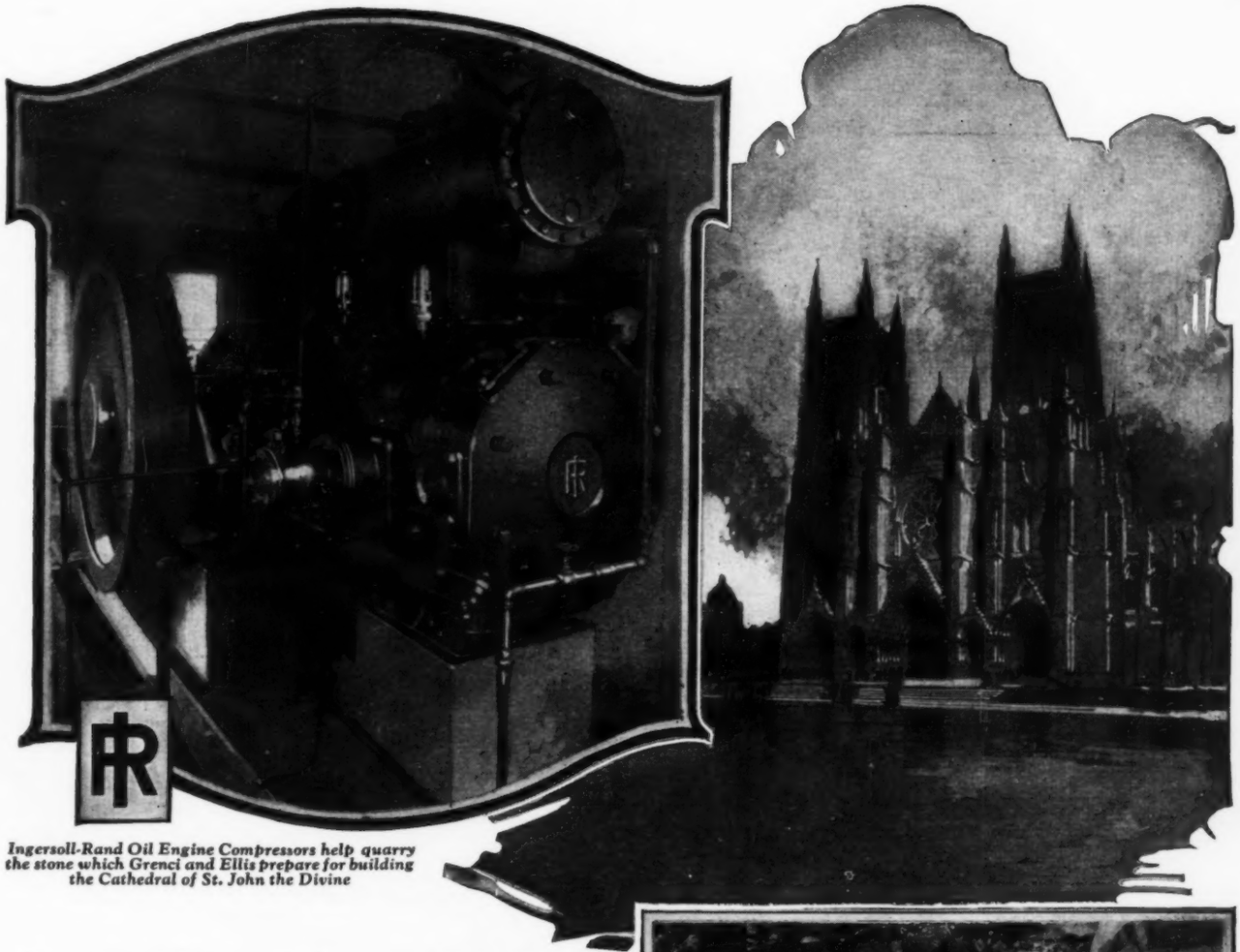
DRAGLINE

CRANE

541

INSLEY MANUFACTURING COMPANY • Indianapolis

Engineers and Manufacturers



Ingersoll-Rand Oil Engine Compressors help quarry the stone which Grenci and Ellis prepare for building the Cathedral of St. John the Divine

Back Your Rock Drills with Good Compressors

Rock Drills should have a compressed air supply which is dependable and economical. Both dependability and economy are characteristic of Ingersoll-Rand Oil Engine Air Compressors.

Many installations are operating on 20- to 24-hour schedules over long periods. Maintenance and repair costs on these units are very low.

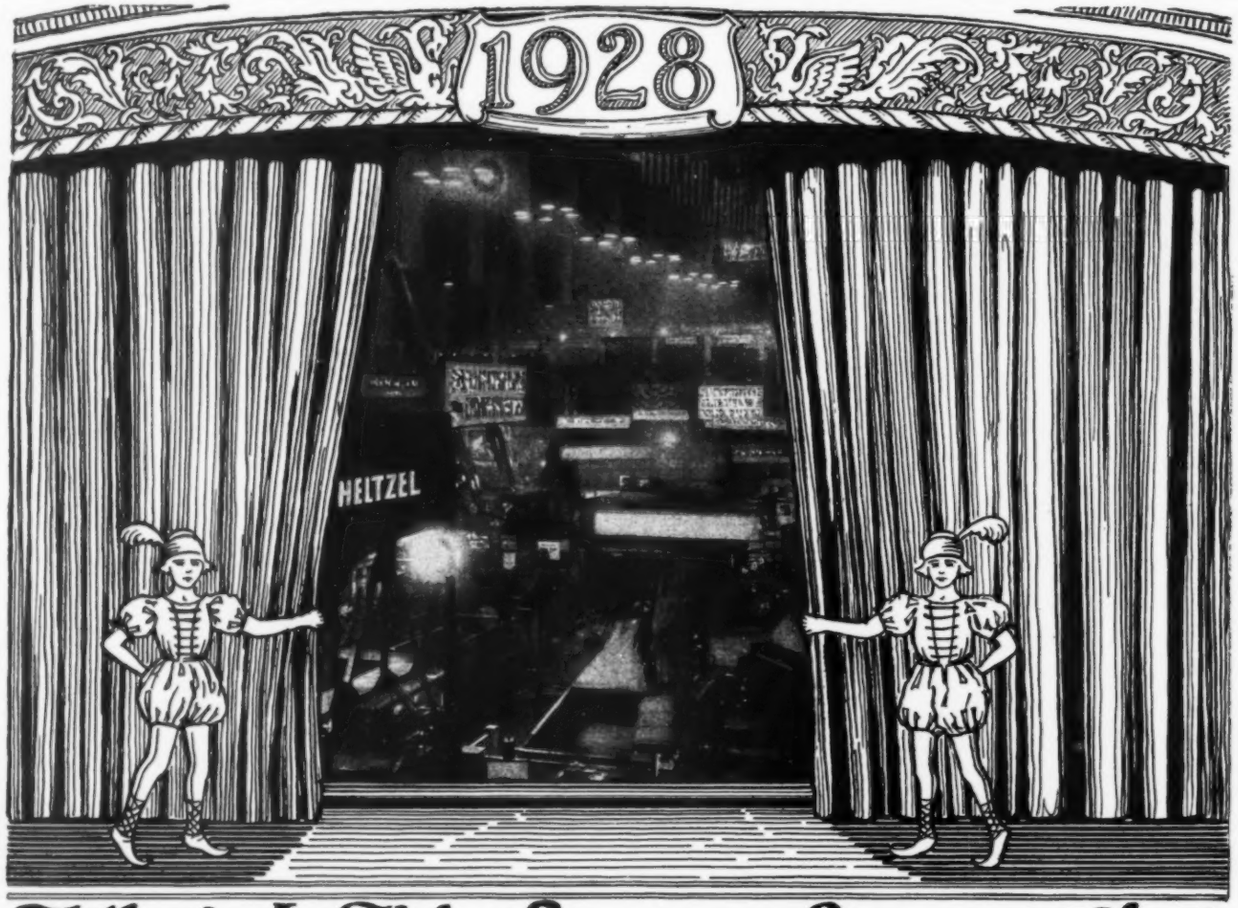
In addition, the oil engine compressors are very economical in operation. A 600-cu.-ft. Type POC-2 unit of this type will operate at a fuel cost of 36 cents per hour when delivering air at 100 pounds.

INGERSOLL-RAND COMPANY
11 Broadway, New York City
Offices in principal cities the world over
For Canada Refer—Canadian Ingersoll-Rand Co., Limited
10 Phillips Square, Montreal, Quebec

I-R Rock Drills in the Grenci and Ellis Quarry near Yorktown, N. Y.

121-SOE

Ingersoll-Rand



What Is This Secrecy Surrounding Heltzels 1928 Road Show Display?

WHAT are these rumors going 'round that HELTZEL has developed a new steel road form which is years ahead of the times? A wee small voice says wait, examine and see it with your own eyes.

What is this new mechanical joint machine for installing longitudinal and transverse joints in city streets and roads and this new collapsible form for the same purpose?

What are these new yoke type curb forms?

And material handling equipment! Absolutely no details until the road show. But, listen! So much contractors equipment is going out of date in 1928 that every contractor and engineer will wonder what is coming next.

If you can't be at the show, write HELTZEL and put your name on record for any of these new HELTZEL catalogues.

Modern Road Building Equipment.
Modern Street Building Equipment.
Modern Material Handling Equipment.
No copies released until after January 10th, 1928.

See HELTZEL display at Booth AA4, Auditorium, Cleveland, Ohio, Road Show, January 9th to 13th, 1928.

THE HELTZEL STEEL FORM & IRON COMPANY, WARREN, OHIO

HELTZEL

The General

FULL CIRCLE SWING!

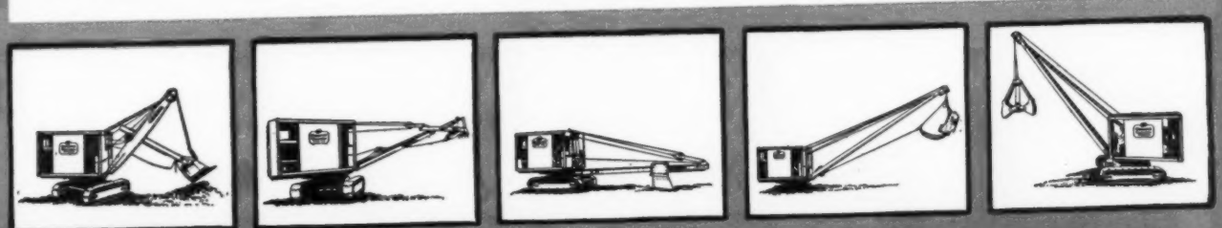
GAS OR ELECTRIC

"years of experience back of it"

Years of continuous engineering experience have been built into the "General." Simplicity and convenience reign throughout. Built up of steel castings. Fast. Mobile. Powerful. Economical. One-man operation. Easily and quickly changed in the field to a Shovel, Skimmer, Crane, Dragline, Clamshell or Back-hoe.

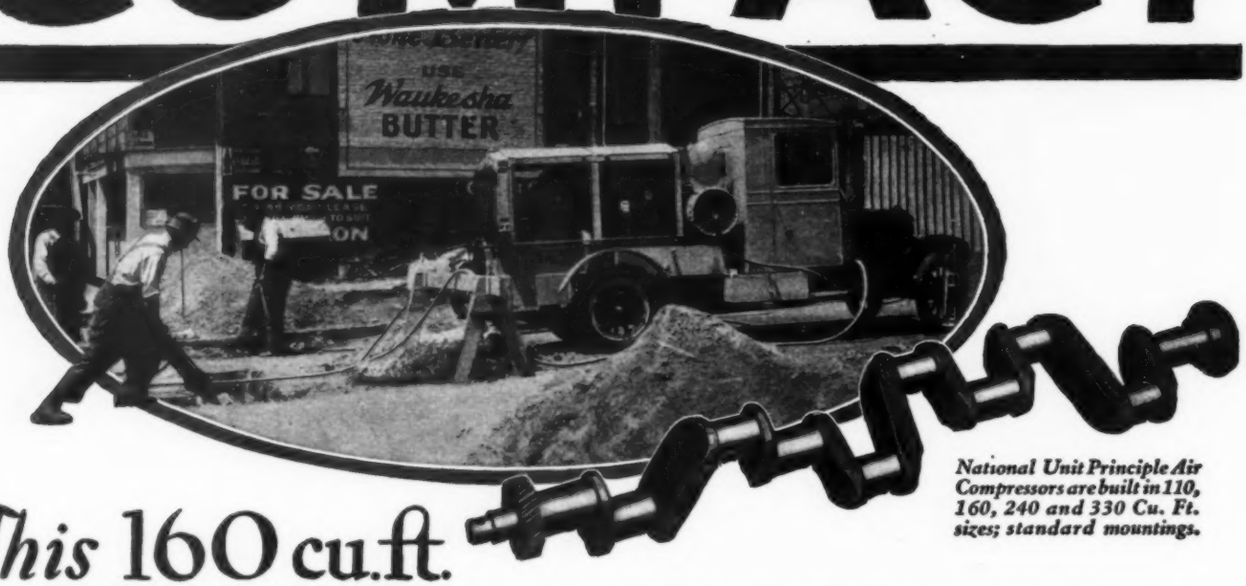
Bulletin 2703 tells "General's" complete history. Send for your copy.

THE GENERAL EXCAVATOR CO., Marion, Ohio, U.S.A.



Here is the General's Staff

COMPACT



National Unit Principle Air Compressors are built in 110, 160, 240 and 330 Cu. Ft. sizes; standard mountings.

This 160 cu.ft. NATIONAL- *mounted on a* Ford 1 *Ton* Truck!

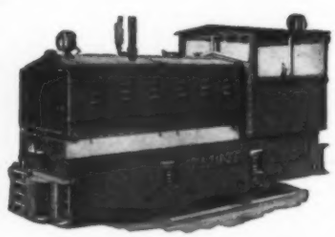
EXTREME compactness, complete portability, and ample capacity are three of the cardinal virtues of the Westinghouse-National Unit Principle Air Compressor.

The two-cylinder compressor and four-cylinder engine are an integral unit—there are no clutches, gears, chains, belts, or couplings. A single crankshaft drives both the compressor and engine. Less "machinery" to look after, fewer wearing parts, less frequent replacements, plus compactness, are some of the advantages.

NATIONAL BRAKE & ELECTRIC COMPANY
Division of Westinghouse Air Brake Co.
MILWAUKEE, WIS.

[*Exclusive territorial sales franchises available*]

National AIR COMPRESSORS
A WESTINGHOUSE PRODUCT



Milwaukee Gasoline Locomotives **will solve your haulage problem. All sizes, all gauges. Pioneer builders of gasoline locomotives since 1907. Get acquainted with our Type "H" Models.**

MILWAUKEE
LOCOMOTIVE MFG. CO.
Subsidiary of National Brake & Electric Co.
MILWAUKEE WISCONSIN

MILWAUKEE *Gasoline* **Locomotives**
Another Westinghouse Product

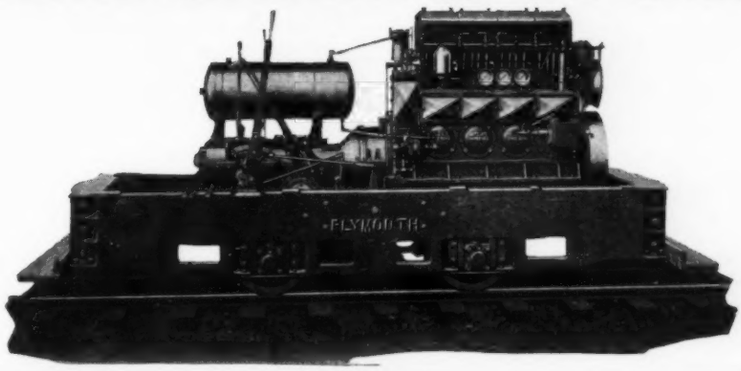
And Now

A STURDY DIESEL-POWERED GEAR-DRIVEN LOCOMOTIVE IS BEING BUILT IN AMERICA

The PLYMOUTH DIESEL LOCOMOTIVE

DESIGNED TO REDUCE FUEL AND OPERATING COSTS TO A MINIMUM

The Locomotive illustrated is the 10-ton size-4 speeds forward and 4 reverse. In actual service this Locomotive handled a gross load of 144 tons up a 3 per cent grade at 8.1 miles per hour. Fuel consumption averaged 3 1-8 gallons per hour.



With thousands of Plymouth Gasoline Locomotives operating in all parts of the United States and foreign countries, meeting with general favor everywhere for their performance and economy, this company takes pride in announcing what is believed to be the first tested and perfected Diesel-powered, gear-driven locomotive built in America.

Fuel oil in many territories has proven its economical advantage. Wherever fuel oil is available, this Plymouth Diesel Locomotive will effect a saving in fuel cost even greater in proportion than Plymouth Gasoline Locomotives have made over other methods of haulage.

PLYMOUTH LOCOMOTIVE WORKS
The Fate-Root-Heath Company
PLYMOUTH, OHIO

GASOLINE PLYMOUTH LOCOMOTIVES DIESEL

If it's a Track Haulage Problem There's a PLYMOUTH to Solve it

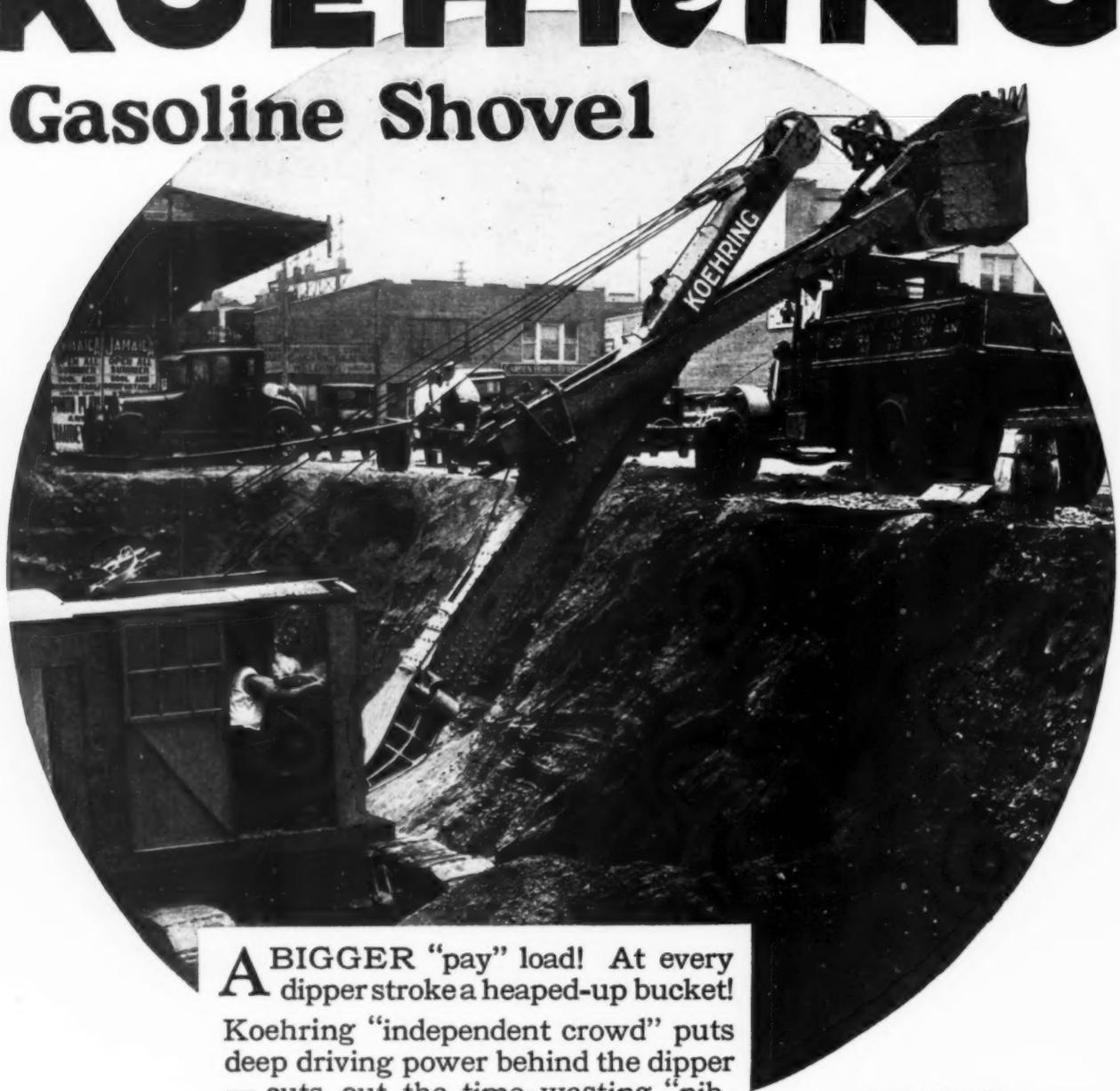
A full range of sizes from 10 to 50 tons.

PLYMOUTH

GASOLINE *Locomotives* DIESEL

KOEHRING

Gasoline Shovel



A BIGGER "pay" load! At every dipper stroke a heaped-up bucket!

Koehring "independent crowd" puts deep driving power behind the dipper — cuts out the time-wasting "nibbling" to get a real dipper load!

"Crowds" the dipper above and beyond the end of the boom!

No need for adjustment of crowding cables! The Koehring is ready instantly at the command of the levers for any work — deep close-in digging, high bank work, level shallow stripping!

Know the Koehring! Write for Shovel Bulletin No. S-17

Shovel Capacities

Line-of-plate struck measure.

Quickly convertible to crane or dragline.

No. 301—19'-6" Boom. ¾ Yd. Dipper on 19' Dipper Sticks; ¾ Yd. Dipper on 16' Dipper Sticks; 1 Yd. Dipper on 13' Dipper Sticks.

Shock absorber on boom. Wisconsin four cylinder gasoline engine, 5¼" x 6½", 1,000 R. P. M.

No. 501—24' Boom. 1 Yd. Dipper on 19' Dipper Sticks; 1¼ Yd. Dipper on 16' Dipper Sticks; 1½ Yd. Dipper on 13' Dipper Sticks.

Shock absorber on boom. Wisconsin four cylinder gasoline engine, 6" x 7", 925 R. P. M.

KOEHRING COMPANY MILWAUKEE WISCONSIN

PAVERS, MIXERS—GASOLINE SHOVELS, CRANES AND DRAGLINES

Sales Offices and Service Warehouses in all principal cities
Foreign Dept., Room 1370, 50 Church St., New York City.
Mexico, F. S. Lapum, Cinco De Mayo 21, Mexico, D. F.

A-4386-1

KOEHRING HEAVY DUTY

On New York's Biggest Job!

Up on the Street, Terry & Tench's Universal No. 4 handling steel.

MORE THAN 26 UNIVERSALS are BUSY

On New York's new subway—where only the most modern methods and proven, efficient equipment are being used—at least 26 Universals, and occasionally as many as 36, are in use, endorsed by these leading contractors—

Rosoff Subway Const. Co.	T. A. Gillespie, Inc.
Terry & Tench, Inc.	Arthur A. Johnson, Inc.
Mason & Hanger	Cranford-Locher, Inc.
Dravo Cont'g Co.	P. J. McGovern, Inc.
Del Balso Cont'g Co.	Oakdale Cont'g Co.

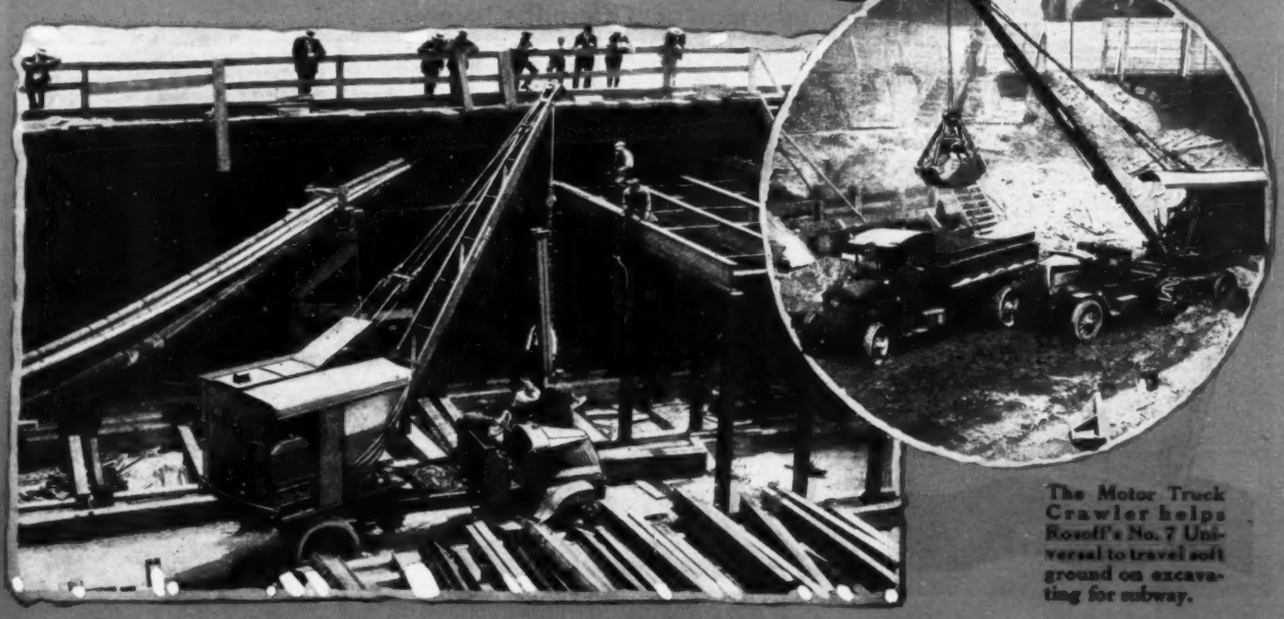
The Rosoff Subway Const. Co. alone has 7 Universals, while others have fleets of 2, 3 and 4. The same Reliable Performance that has made Universal the repeated choice of these contractors, can be applied to your work—on large or small jobs—to make you bigger Profits.

Bulletin No. 236 gives further details—Write for it.

THE UNIVERSAL CRANE CO.

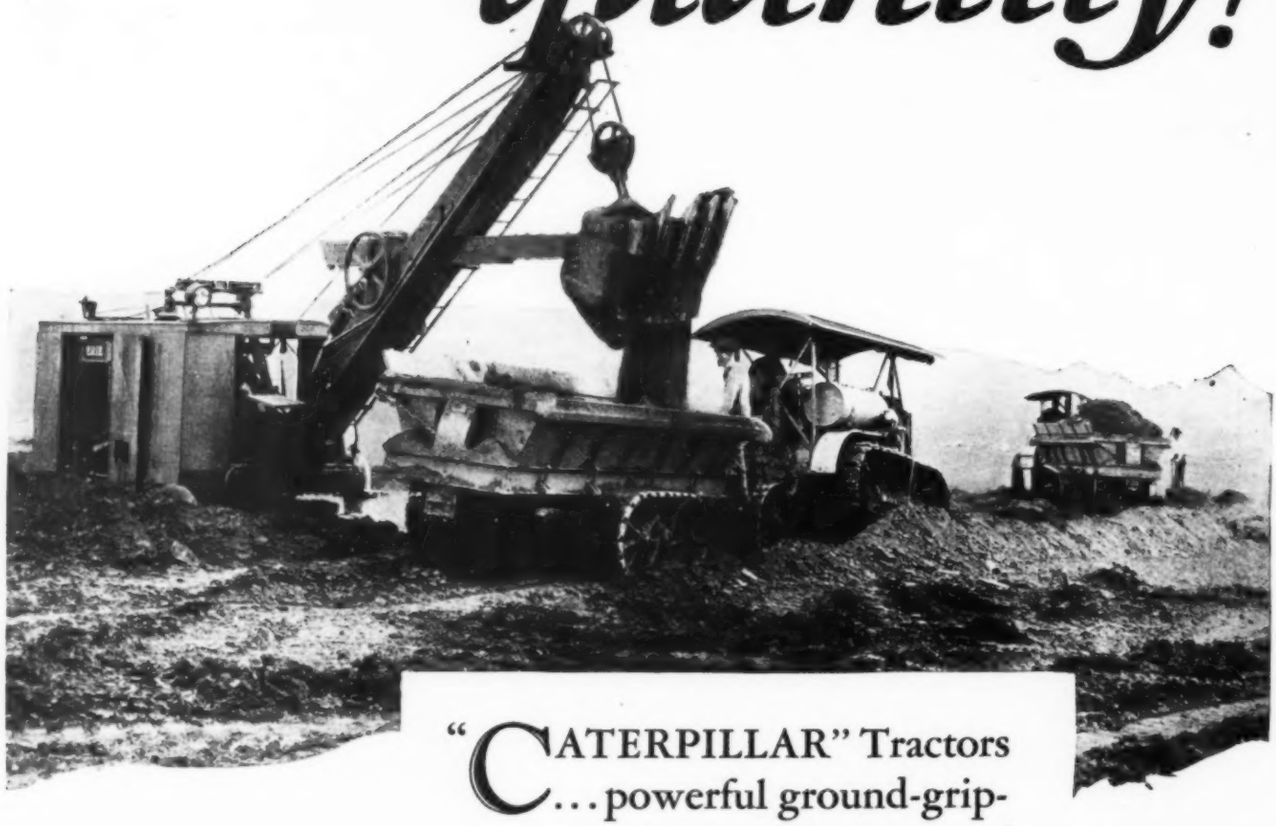
911 SWETLAND BLDG. CLEVELAND, O.

Down in the cut, Terry & Tench's Universal No. 4 erecting steel.



The Motor Truck Crawler helps Rosoff's No. 7 Universal to travel soft ground on excavating for subway.

Cash in on *quantity!*



"CATERPILLAR" Tractors . . . powerful ground-grippers . . . make possible the use of heavier graders, bigger wagons, larger scrapers . . .

Scores of manufacturers today offer to the contractor sturdy equipment designed to make the most of "Caterpillar" power.

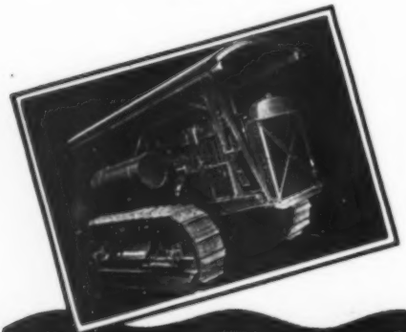
And earth moving on a wholesale scale makes even the smaller jobs pay for the equipment . . . plus a profit. And then the outfit is ready for another profitable job!

Prices

2-TON . . . $1850
PEORIA, ILLINOIS

THIRTY . . . $3000
PEORIA OR SAN LEANDRO

SIXTY . . . $5000
PEORIA OR SAN LEANDRO



There is a "Caterpillar" Dealer near you.

CATERPILLAR TRACTOR CO.
Executive Offices: San Leandro, California, U. S. A.
Sales Offices and Factories:
Peoria, Illinois San Leandro, California
Distributing Warehouse: Albany, N. Y.
New York Offices: 50 Church Street
Successors to
BEST C. L. Best Tractor Co. The Holt Manufacturing Company HOLT

better quicker cheaper

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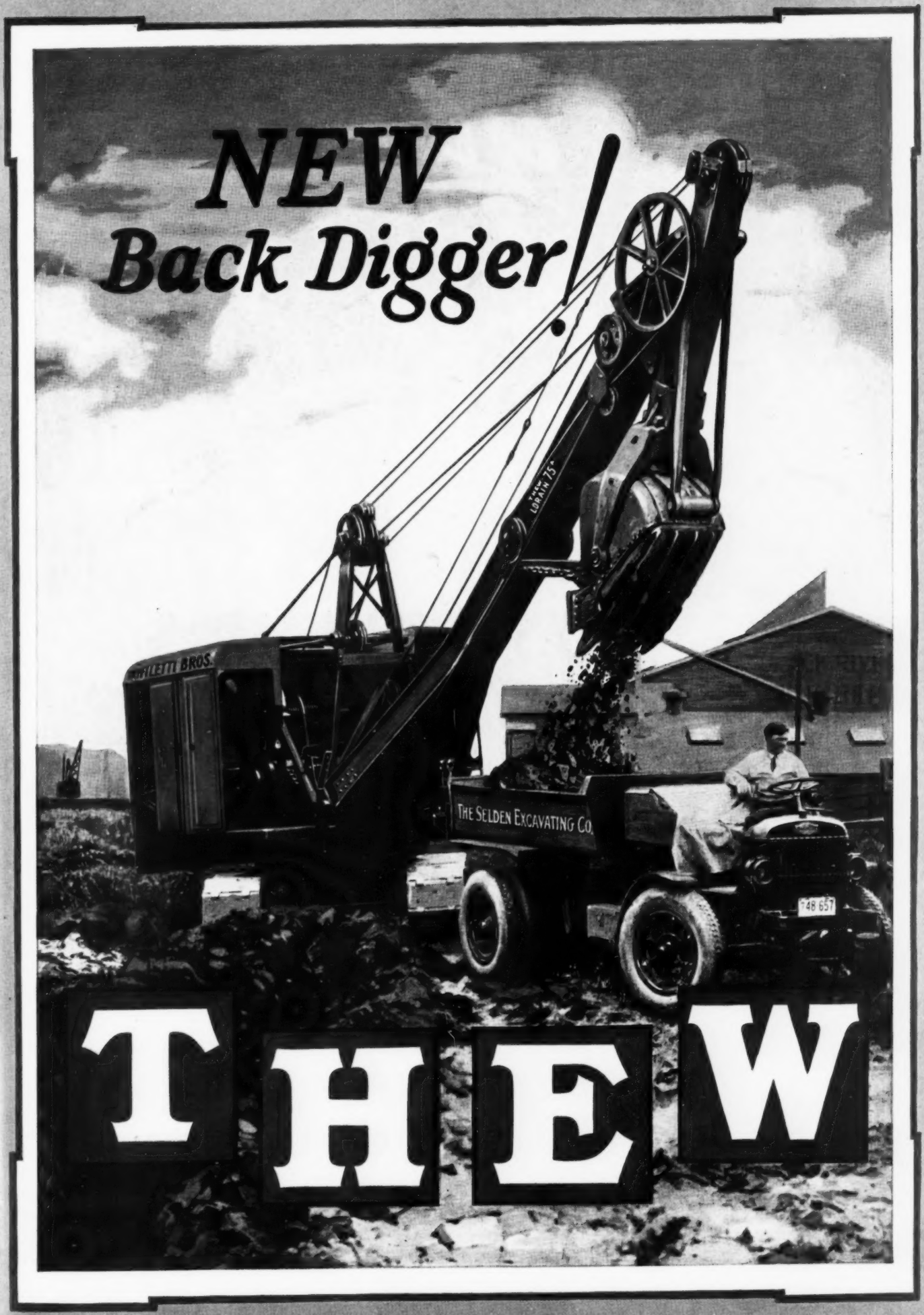
CATERPILLAR
REG. U.S. PAT. OFF.


NEW
Back Digger
THE
LORAIN 75
THE SELDEN EXCAVATING CO.
748 657

Spots The Dipper Far Out~

And Holds The Load

The TIP-AND-TILT Dipper Gives Five NEW Back-Digger Advantages!

IN removing *one* limitation of the ordinary Back-Digger Thew gained no less than *five* new and distinct operating advantages over any existing type of Back-Digger equipment. Not only is it now possible to undertake trench and certain classes of ditch and cellar excavation with the assurance of better work at a very low cost, but there are new operations which take the Back-Digger out of its former restricted field and make it a many-job, all-the-year-'round machine.

The outstanding difference of the New Thew Back-Digger is the operator-controlled Tip-and-Tilt Dipper. Now the load can be held until the dipper is spotted at any point—close in or far out—over truck, wagon, bin or spoil pile—then instantly dumped. This one feature opens up new jobs and new profits.

In all the world there is no other machine that can successfully undertake these five operations—

1. Hold material in the bucket until it has been brought to *any* desired dumping position.
2. Completely empty the dipper into trucks, wagons or bins without spilling or dump exactly where the operator wants it on a spoil pile.
3. Cut a *vertical* wall downwardly opposite the machine.
4. Control the cutting angle of the dipper for greatest efficiency in various materials or shapes of cut.
5. Back-fill without disturbing ground on which spoil bank has been dumped; overturning and completely emptying the dipper into the trench.

Thew has *again* proved Engineering Leadership in the New Thew Back-Digger with the operator controlled Tip-and-Tilt Dipper. This Back-Digger equipment can be quickly and easily attached to any Lorain 60 or 75 machine in the field.

Full details of this New Thew Back-Digger are contained in Bulletin 409. New excavating methods may affect your business—write today for your copy.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

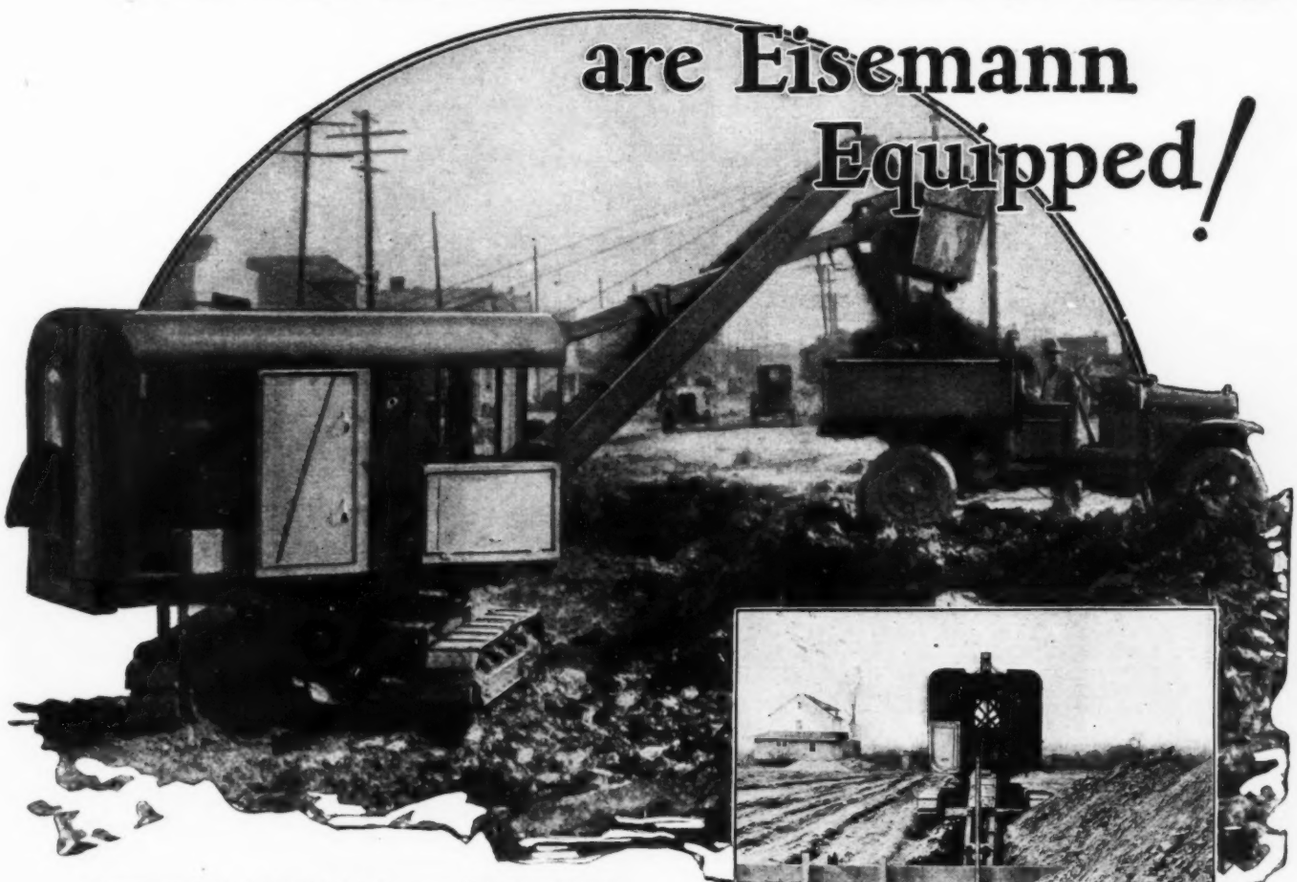
THEW

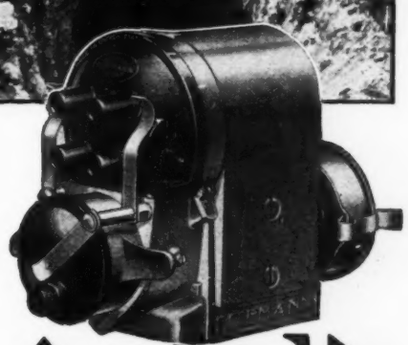
SHOVELS—DRAGLINES CRANES—BACK-DIGGERS

Gasoline Steam *Electric Powered*

THEW CENTER DRIVE

SPEEDER SHOVELS are Eisemann Equipped!





SPEEDER Light-Weight Convertible SHOVEL CRANES are designed for economical operation—to cut the costs, and save the contractor's money.

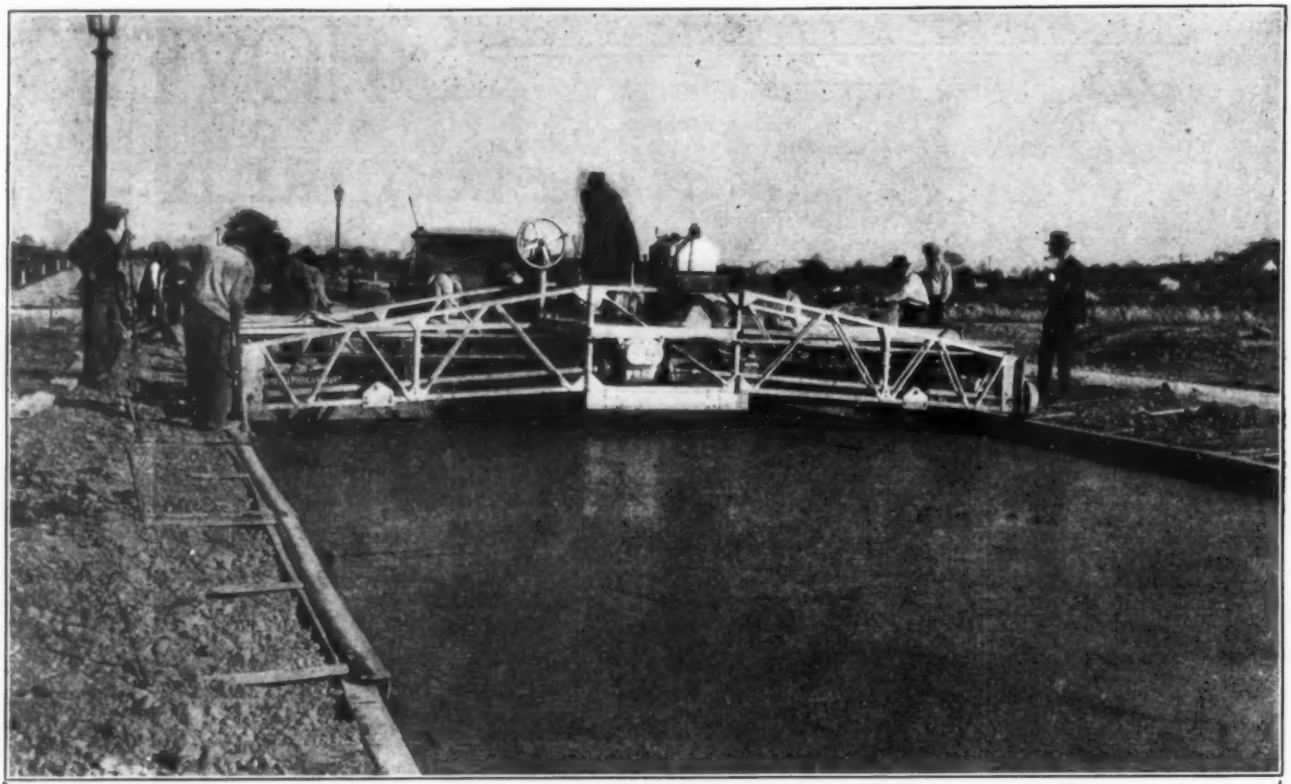
And, economical operation is the outstanding characteristic of the ignition system on these excavators. For Eisemann Magnetos never fail to function—and cause no expensive delays or shut-downs.

Speeder-owners enjoy Eisemann-economy—and pocket the saving.

EISEMANN MAGNETO CORPORATION
165 Broadway - New York
DETROIT - SAN FRANCISCO - CHICAGO

EISEMANN

EISEMANN
ELECTRICAL EQUIPMENT



Lakewood Type "C" Machine Finishing 8¾-in. below top of curb

Finishing City Streets

The adaptability of the Lakewood Type "C" Finisher can be illustrated in no more graphic manner than by the above photo. Note that the screed and tamper board are finishing the concrete slab 8¾ in. below the top of the sandstone curb. The concrete was hauled from a central mixing plant and was an unusually dry mix.

This 24-foot slab is the base for an asphalt street being laid by the Ohio National Pavements Company, of Cleveland. The work is being done in the Shaker-Lee development near Cleveland.

Perhaps you have an unusual job that can be solved by the adaptability of the Lakewood Type "C" Finisher?

"Just a Few Out of the Ordinary Jobs Done by Lakewood Finishers" is an illustrated booklet which will prove interesting to every paving contractor. Ask for Bulletin 48-S.

The LAKEWOOD ENGINEERING COMPANY, Cleveland, O.

Please send a copy of "Just a Few Out of the Ordinary Jobs."

Name .....

Address .....

.....

.....

EXPORT OFFICE: 30 CHURCH ST., NEW YORK CITY — CABLE ADDRESS BROSITES

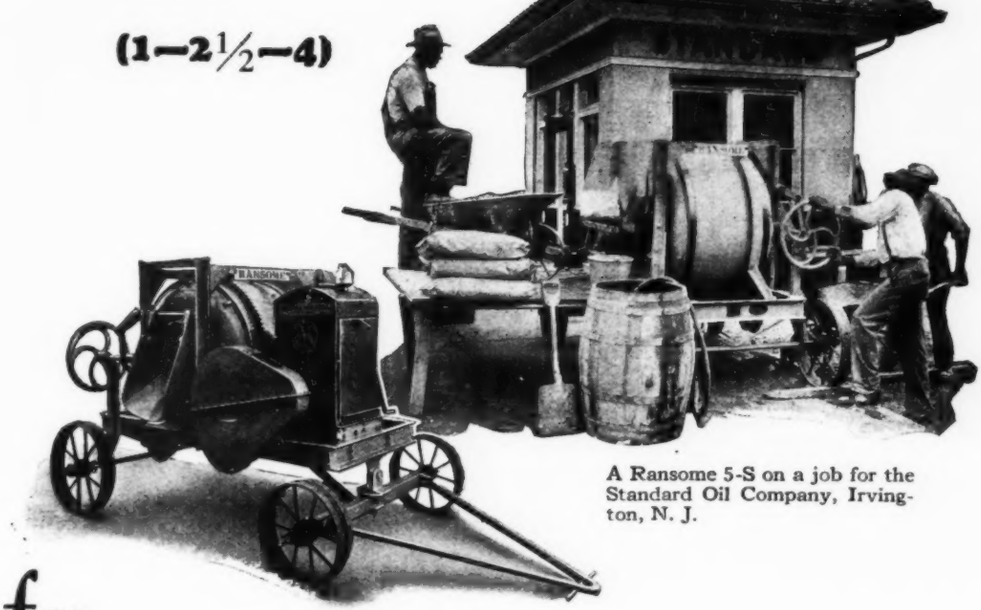
The LAKEWOOD ENGINEERING CO.

CLEVELAND, OHIO.

No. 5-S Standard Building Mixer

a Ransome "1 bagger"

(1—2½—4)



A Ransome 5-S on a job for the Standard Oil Company, Irvington, N. J.

for

The smaller contractors who want a one-bagger built to the standards of large mixers.

The large contractors who are not satisfied with a small mixer built to lower standards.

DRUM—
42 inches by 30 inches, with unusually large rounded corner to facilitate quick mixing with easy cleaning and give ample room to handle a one-bag batch of 1-2½-4.

QUICK FEED—
The charging chute is large and shaped to give rapid charging with wheel-barrows. Power loader takes full load without crowding and goes up in five seconds.

FAST DISCHARGE—
Six to seven seconds.

CONTROL—
All control levers at drum end. Operator sees both power loader and discharge.

GEARS—
Cut for quiet running. Alemite lubrication.

FRAME—
Simple and rugged with unusual accessibility for making repairs or replacements.

TRUCKS—
Short-coupled with front wheels turning under frame—easy to get mixer into limited space.

CHOICE OF POWER—
Single cylinder LeRoi or Novo; two cylinder Novo or electric motor.

RANSOME DOMESTIC REPRESENTATIVES

ALBANY, N. Y.
Sauer-Spuck Supply Co., Inc.
ASHEVILLE, N. C.
North State Culvert & Machinery Co.
ASTATULA, FLA.
Prescott Machinery Co.
ATLANTA, GA.
Henry G. Williams
B. F. Avery
BALTIMORE, MD.
Coles & Ransome
BIRMINGHAM, ALA.
Smith-Meadow Supply Co.
BOSTON, MASS.
The Clark-Wilcox Co.
BROOKLYN, N. Y.
Fitzgerald & Sheehan
BUFFALO, N. Y.
The Wheeler-Murray Co.
BUTTE, MONTANA
Western Supply Co.
CANTON, OHIO
J. C. Neely & Co.
CLARKSBURG, W. VA.
Clarksburg Supply & Equipment Co.
CHARLOTTE, N. C.
W. Fred Casey and Co.
CHATTANOOGA, TENN.
Brown Craven Equipment Co.
CHICAGO, ILL.
Ransome Concrete Machinery Co.
CINCINNATI, OHIO
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Going to the Road Show?

THE annual Convention and Road Show of the American Road Builders' Association will be held in Cleveland, January 9-13, 1928.

By all means go if you can possibly make it. There you will meet road builders from all over the country and will benefit by an exchange of ideas and experiences. Likewise the manufacturers of construction equipment and materials used on road-building and maintenance, as well as on general construction, will display their latest contributions to the industry, a great educational exhibit of improved equipment and material.

In any event, whether you go or not, you will want to look through the Road Show Convention Issue of *Construction Methods*. This will be a road show in itself. Already plans are under way to make this issue one of the best of the year.

Here you will find a pictorial review of the road-building practice of the year. Graphic descriptions will tell of the methods employed and the equipment and materials used by successful contractors everywhere. Here you will glimpse something of the future of the industry as well.

The advertising pages, likewise, will be a permanent exhibit of modern construction equipment and materials offered by progressive manufacturers, and, together with the editorial pages, will make up an interesting and useful volume for reference throughout the year.

Watch for the January issue of *Construction Methods*. You will find it well worthwhile.

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A McGraw-Hill Publication
Tenth Avenue at 36th Street
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Saves Time and Money in Building Sewers

THE use of INDEPENDENT Reinforced Concrete Sewer Pipe means substantial savings of time, money and trouble at EVERY stage of construction—from manufacturing the pipe to sealing the sewer joints.

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Water from springs in surrounding hills making it impossible for the contractor to use trucks on this new road job—the County Engineer of Bergen County, N. J. ordered several thousand feet of Rapid Drain Pipe to quickly relieve the condition.

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Rapid Drain Pipe
WALKER CEMENT PRODUCTS, Inc.
PLANT NO. 2 BALDWIN, L.I. N.Y. LITTLE FERRY, N.J. HEMPSTEAD R.F.D. 3

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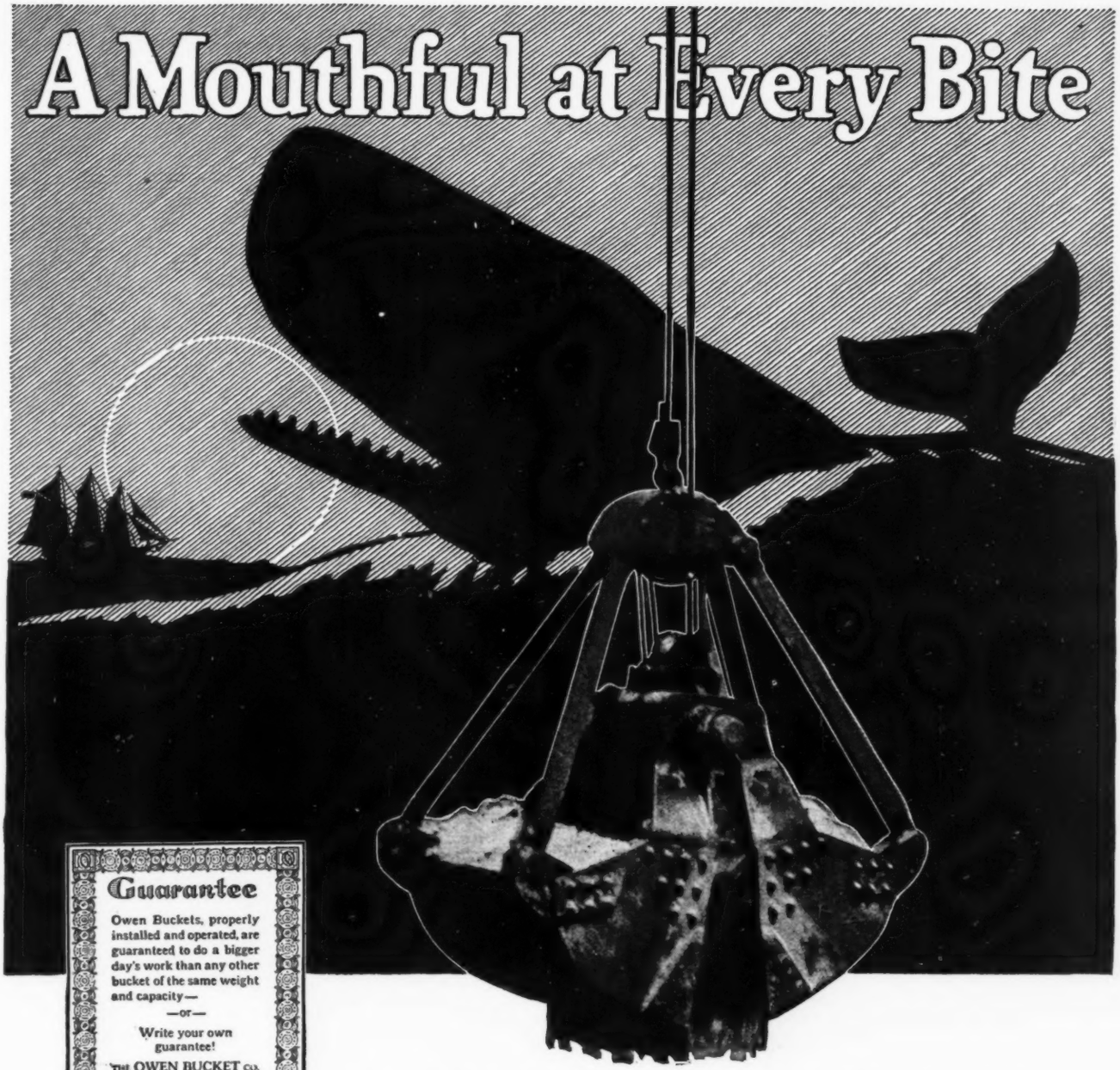

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Read the above guarantee carefully. Successful performance and actual results have made it possible.

See the OWEN EXHIBIT *at the Road Show* Jan. 9-13, 1928 at CLEVELAND

Capacity—that's the whale's ability to scoop up a huge mouthful of scattered food—and the Type "K" Owen's power to quickly gather up an overload grab in loose materials.

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Type "K" Owen Buckets have saved thousands of hours in rehandling time and even more dollars for their users.

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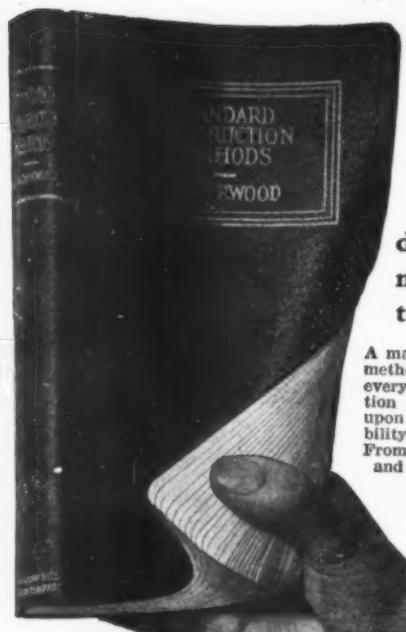

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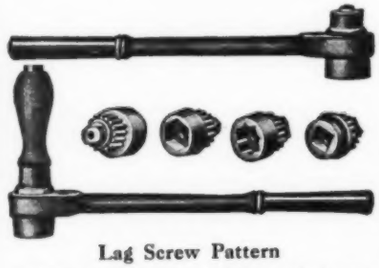
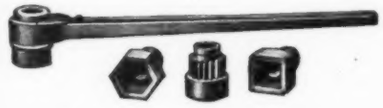


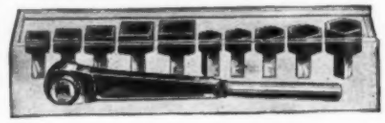
Lag Screw Pattern

Finished in black enamel with socket openings both hexagon and square from ½-in. to 1 1/16-in. across the flats.



Steel Socket Bridge Pattern

Finished in black enamel with socket openings both hexagon and square from 1-in. to 5-in. across the flats.



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Expressed in bolt diameters.

Write for Catalogue M, inform us as to your line of work, and we will tell you how others in similar lines are profitably using

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Bear Cat Ditcher owned by E. P. Langenhan Co., Cleveland, digging house connections for sewer and water through stratified sandstone. The Langenhan Co. owns two Bear Cats.

See the Bear Cat at the
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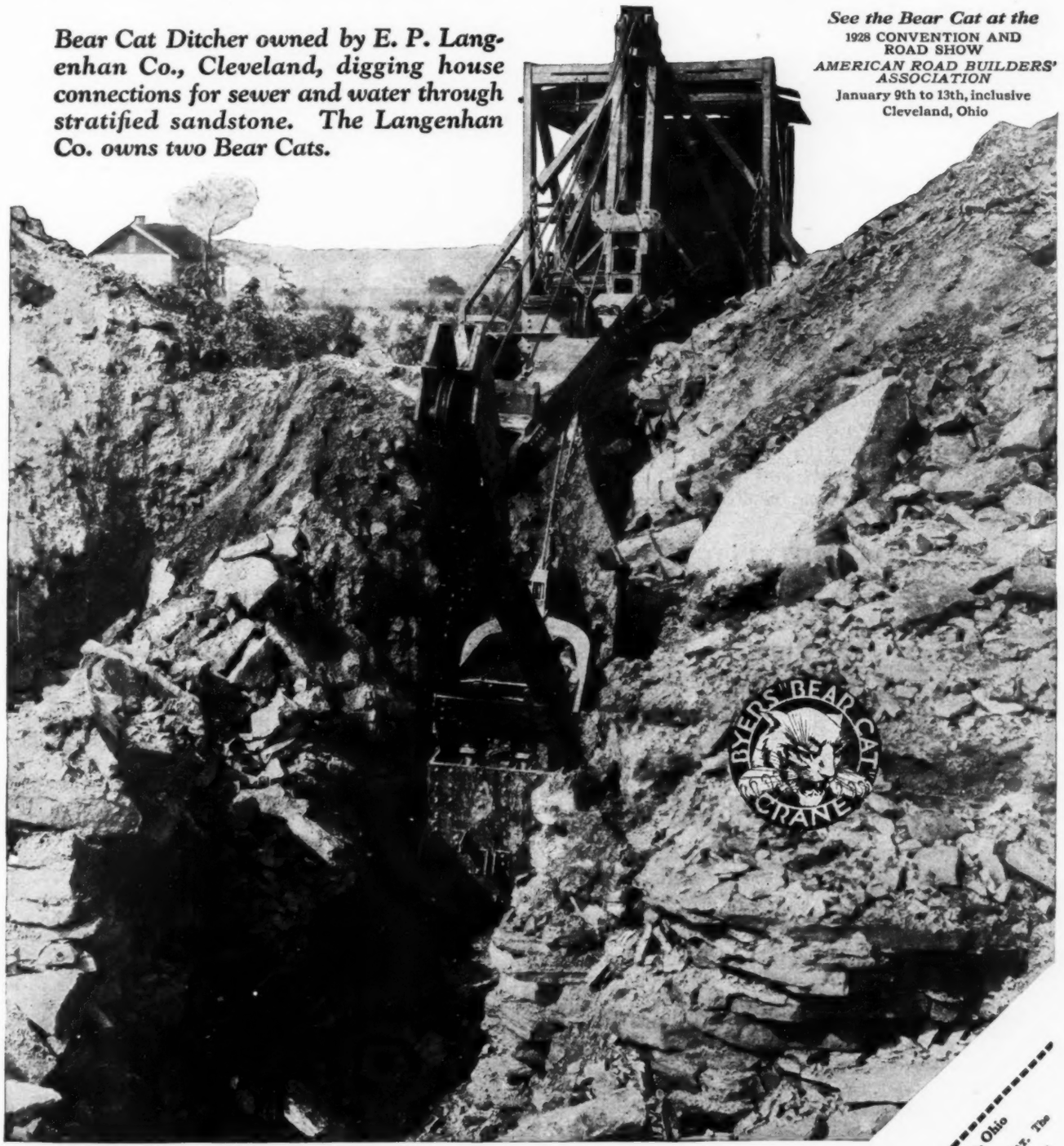
AMERICAN ROAD BUILDERS' ASSOCIATION
January 9th to 13th, inclusive
Cleveland, Ohio



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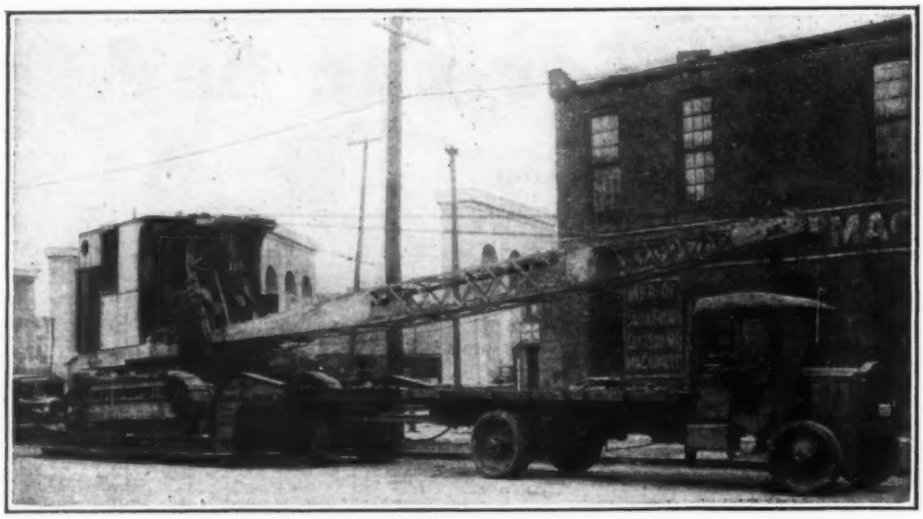

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4-Cylinder

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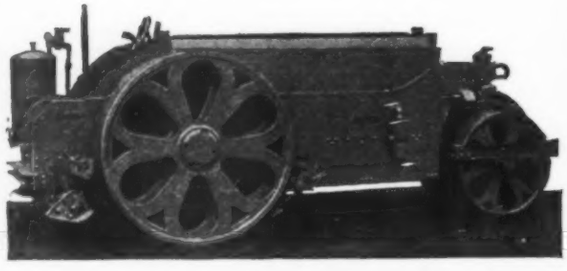
Four cylinders—four sizes (5-7-10-12 tons). Look to Huber for easy single-lever control—short turns—quick action—low up-keep—unusual dependability. The Huber is endorsed and used by leading contractors everywhere. It will be worth your while to scnd for free catalog giving full mechanical details.



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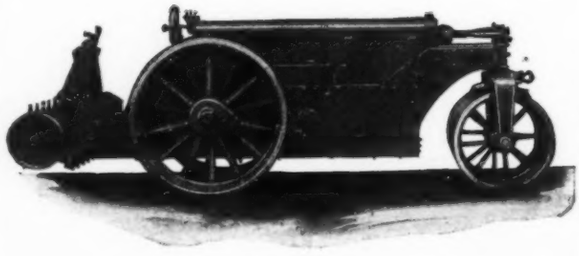

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Inquiries invited.

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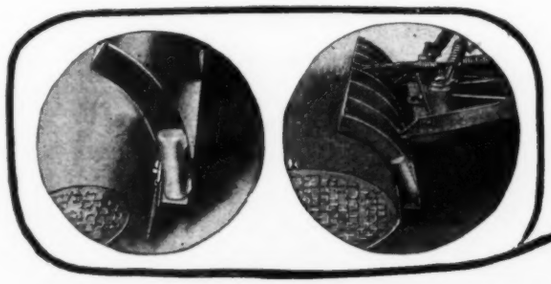
GOOD ROADS EXCLUSIVE FEATURE
No. 3
Automatic blade release which allows plow to ride smoothly over obstructions such as culverts, curb, etc., and snaps back into working position when the obstacle is cleared.



Blade in working position about to strike obstruction.

Blade striking obstruction Large spring is compressed to allow blade to ride safely over. Then blade snaps back into position. Small spring takes up force of recoil.

with *Good Roads* SNOW PLOWS

Here's the latest Good Roads Champion Snow Plow Catalog. Send for your copy now.

In buying equipment for your snow removal program remember this:

The few extra dollars that it costs to buy good snow plows is not only returned in the added efficiency of their every day performance, but also in the added years of dependable service.

Good Roads Snow Plows can be attached to all available trucks in a few minutes and the removing of snow can be started in all sections as soon as the first flakes fall.

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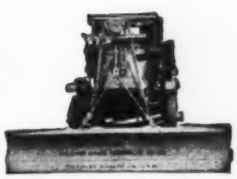
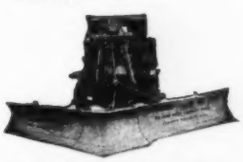


Good Roads Champion Blade Type for motor trucks—model 11-B heavy. Same plow as 10-C only heavier.



Good Roads Champion High Speed. Adjustable with V-type. Model 21-B for motor trucks. Clears a 14-foot sweep at 20 miles an hour.

Good Roads Champion V-type for motor trucks—model 20.

Good Roads SNOW PLOWS

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40 cu. ft. to shape.
More when heaped.

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A year round outfit that will do the work of three to four two-horse teams at less than half the cost. Easton Trailers work right through rain or shine. They'll help you make a fill-cut-or build a dam in record time. More loads can be hauled because their sure automatic dumping methods prevent delays at point of discharge. They are all steel, rugged in construction.

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Low Daily Operating Costs

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One 50-gallon barrel of oil will operate this machine for 20 to 35 hours—or for 2 to 3½ ten-hour shifts—depending on the digging—*fuel consumption is low.*

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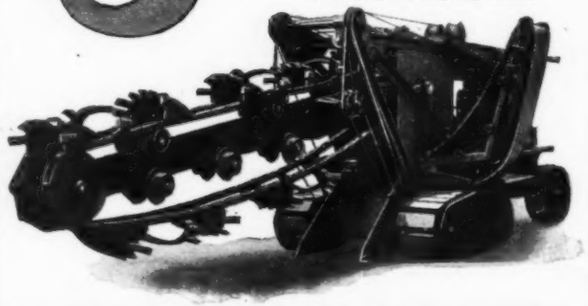
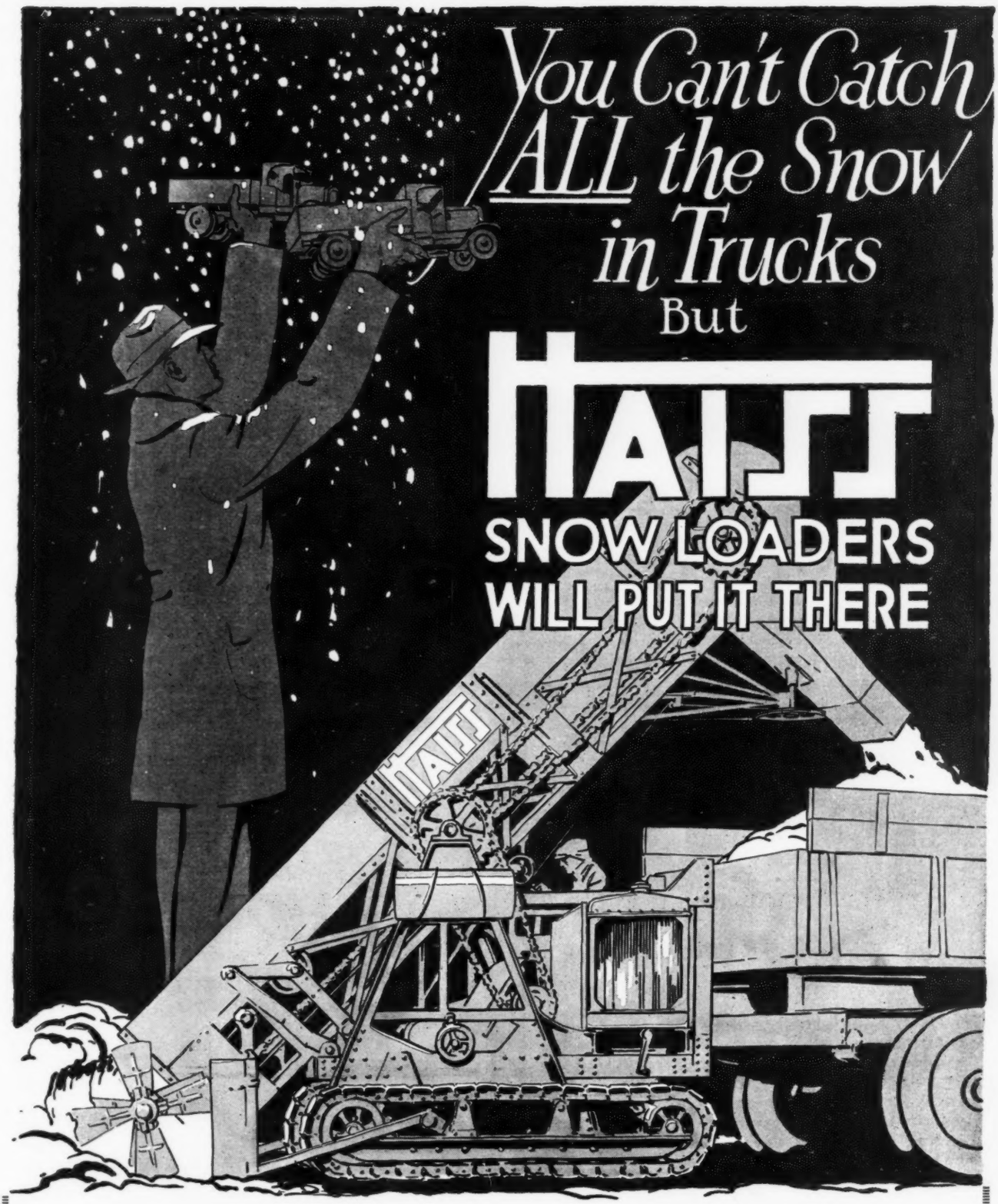


P&H TRENCH EXCAVATORS

You Can't Catch ALL the Snow in Trucks But HAISS SNOW LOADERS WILL PUT IT THERE



HERE'S the machine that will enable you to *dig* the snow from your city's streets this winter on a profitable basis. It's the HAISS Snow Loader that loads 10 to 15 cu.yds. of snow in one and a half minutes. Wet Snow, Dry Snow, Frozen Snow or Sticky Snow—It will handle any condition.

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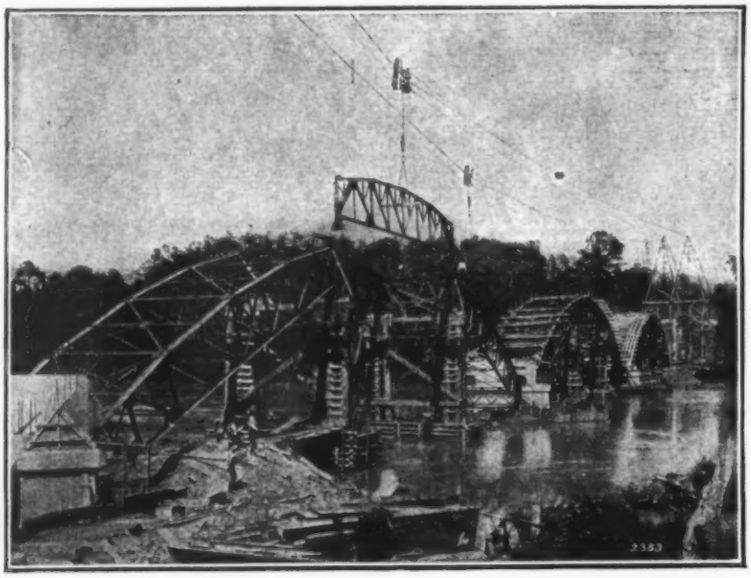

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Illustration shows our duplex cableway placing steel work on Pee Dee Bridge. Cableways not only place materials that enter into the permanent structure, but operate grab buckets during excavation, take out excavated material; place concrete forms, handle automatic dumping concrete tubs; they move auxiliary equipment from place to place along the line of work.

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For every kind of contractors' hoisting service

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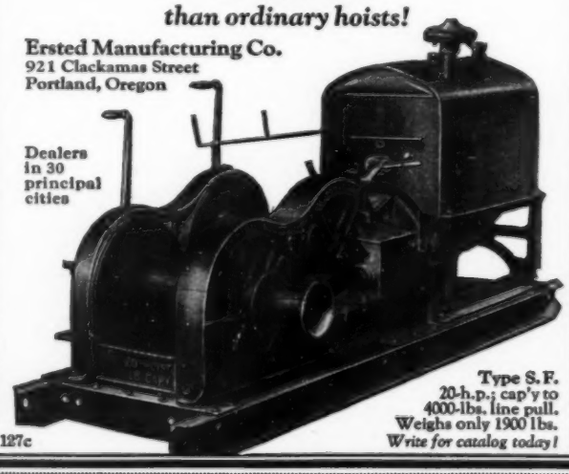

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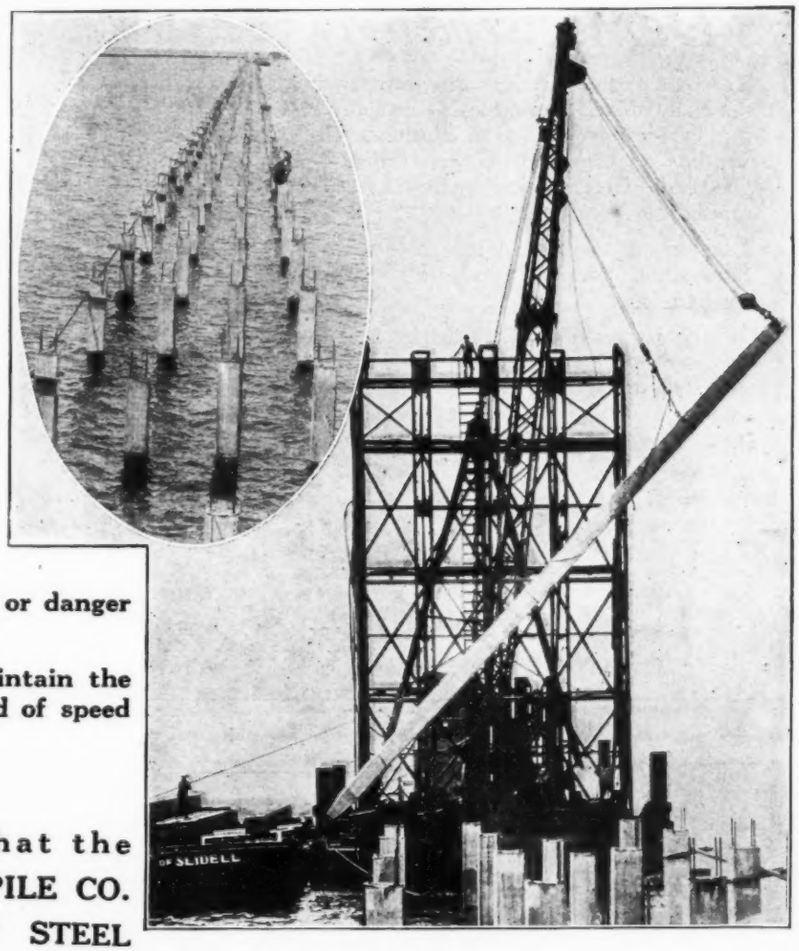
for the New Orleans—Ponchartrain Bridge Job.

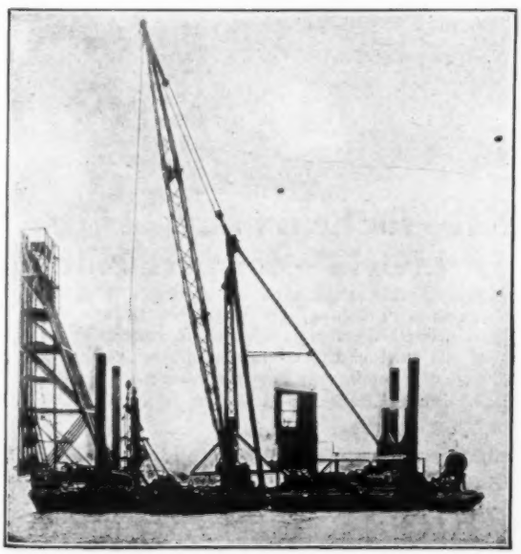


This derrick with 105 ft. boom, set and drove 2,796 precast piles, 24 in. x 24 in. x 85 ft., in record time, completing the driving 3½ months ahead of schedule.

Special fall blocks permit piles to be picked up without equalizer bar or danger of breakage.

LAMBERT HOISTS helped to maintain the schedule that sets this new record of speed in bridge construction.

IT IS SIGNIFICANT that the RAYMOND CONCRETE PILE CO. bought 2 New LAMBERT STEEL BARGE DERRICKS and 13 New LAMBERT HOISTS for the FIVE-MILE CONCRETE PILE BRIDGE across LAKE PONCHARTRAIN, LA.



IT PAYS TO BUY THE SATISFACTION IN LAMBERT STEAM—ELECTRIC—GASOLINE HOISTS AND DERRICKS.

"For All Purposes"

Lambert Hoisting Engine Co.

Main Office and Works

117 Poinier Street **Newark, N. J.**

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Superiority Demonstrated

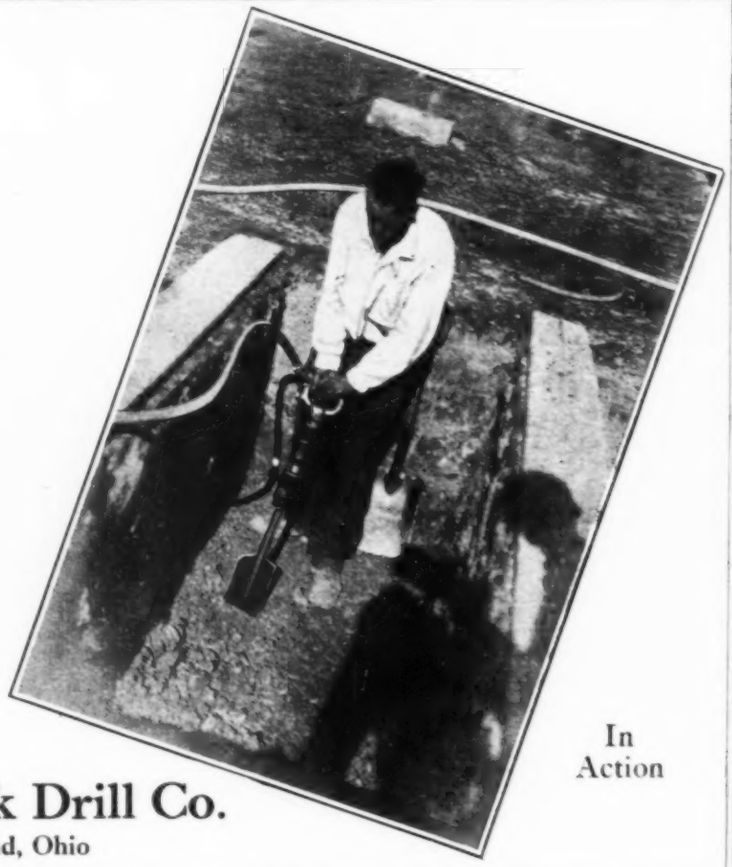
Tearing through hard clay inter-mixed with shale and shattered sandstone—demonstrating before members of a National Convention of Cemetery Superintendents—a Cleveland Clay Digger again proved its superiority.

Digging an adult grave 5½ feet deep, it finished 45 minutes ahead of its nearest competitor.

It takes two men six hours to dig one grave by hand. Two Cleveland Clay Diggers dug *two* graves in *three* hours. A cost saving of 67% over hand methods.

Just another indication of the convenience and efficiency of Cleveland Clay Diggers on any job.

If you don't use them, ask about them.



In Action

The Cleveland Rock Drill Co.
3738 E. 78th St., Cleveland, Ohio

UNION
in Florida
Read what the Superintendent says:
"Your records will show amount of repairs shipped us and I would state that we have the most of these parts in our store room at the present time."

This user (Conner's Florida Highway, Inc.) has had a wide and long experience with Union Hammers in driving piles for bridges, bulkheads, crushing-plant foundations, etc. And this experience proves that Union Hammers stand hard service with minimum repair costs.

Built in 9 sizes—steam or air driven. Built so as to make users *repeat users.*

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UNION IRON WORKS
Monroe and Grove Sts.
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ALL STEEL CRUSHERS

STRONG—for heavy duty
LIGHT—for portability

As a crushing unit with large capacity, strength to stand the severest strains of crushing, yet still light enough for portability, the Univeral Crusher is without an equal. These crushers are of all steel construction, manganese equipped and instantly adjusted for fine or coarse crushing.

Built in *22 sizes* with capacities up to 450 tons per day.

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UNIVERSAL CRUSHER COMPANY
327 8th Street W., Cedar Rapids, Iowa

UNIVERSAL CRUSHERS

"THE BEST ON THE MARKET"

Model 203 Buckeye owned by the Mobile Construction Co., Mobile, Ala. In 8 hours it digs 800 to 1000 lineal feet of ditch averaging 24 inches wide, 10 feet deep.

THE experience of users is a safe guide to follow in selecting construction equipment.

Prospective buyers of trenching machines may rightly expect Buckeyes to serve them as profitably as they have others. For instance, as this Model 203 has those well-known Southern contractors, the Mobile Construction Company.

Asked recently for their opinion of this trencher, strictly from the viewpoint of performance, they replied that they consider it *"the best on the market."*

A broad claim, that, but trustworthy, coming directly from their general superintendent. He supports his enthusiasm with this list of operating features which he believes makes a Buckeye superior: power steering device, ready accessibility of working parts, heavy construction, high class power plant and chain drive over gears.

That Buckeyes are their own best salesmen is proven positively by the fact that re-orders comprise a large percentage of our business.

THE BUCKEYE TRACTION DITCHER CO., FINDLAY, OHIO

There's a Buckeye Sales and Service Office Near **You**

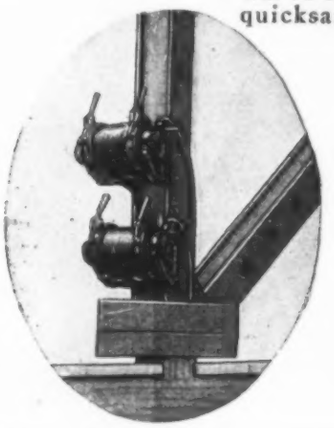
Buckeye TRENCH EXCAVATORS FOR OVER 30 YEARS

Turbinair Hoist Handles Orange Peel Bucket

JOSEPH WINTERBOTTOM, Cleveland contractor, ran into quicksand on a Lakewood sewer job. He had to put on an orange peel bucket to lift the quicksand from the caisson. He selected the versatile little "Turbinair" Hoist to handle the bucket

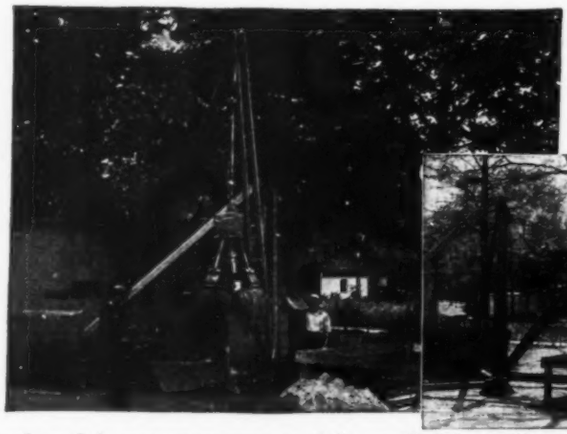
The sewer consisted of a mile of egg-shaped tunnel, with a cross-sectional diameter of 48 inches, driven through shale rock. The only earth encountered was in the two shafts from which the tunnel was worked.

In sinking one of these shafts, which was 90 feet deep, quicksand was encountered, and it was necessary to sink a steel caisson. A ¼-yard orange-peel bucket worked inside this caisson to lift out the quicksand, and the Turbinair Hoist handled the bucket.



The two cables needed to lower the bucket into the caisson, and to close and lift the loaded bucket, were handled conveniently on the two drums of the hoist.

Turbinair Hoists, weighing only 345 lbs., will lift 2000 lbs. at 110 ft. per min., or will pull a 100,000-lb. car on level track. Their unusual power, in connection with low cost, lightness, and easy portability, make Sullivan Hoists the choice of many contractors. Single and two-drum "Turbinair" or Electric models are available.



At left: Orange Peel Bucket operated by hoist. *Below:* Spoil Bucket and stiff-leg derrick.

Write for the picture book "Handy Hoisting and Hauling"

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168 SOUTH MICHIGAN AVE., CHICAGO, U. S. A.

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For a Free Tour of Over 50 Ditching Jobs

Here's a chance to make a free inspection tour of over 50 progressive ditching jobs, without going outside of your own door. Barber-Greene men have gathered information, pictures and layouts on interesting features of ditching work in every section of the country. The best of these have been collected in the 1927 edition of Ditching Snapshots and Records. Sending this ticket brings your copy—send it today.

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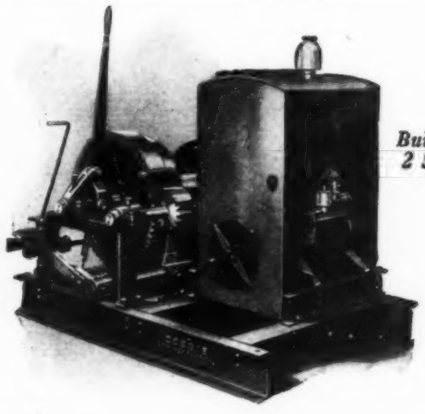
BARBER GREENE

Portable Belt Conveyors — Self Feeding Bucket Loaders

Coal Loaders . . . . . Automatic Ditch Diggers . . . . . Coal Feeders



Built in 2 Sizes

We know your hoisting problems! . . . this hoist will help solve them

This is an eight horsepower unit that fits all your requirements for a rugged hoist for light work.

Equipped with a single friction drum fitted with foot brake, ratchet and pawl and is direct geared to a two-cylinder hopper-cooled engine. Complete in all details.

Built in two sizes: one with a speed twice that of the other and a single line lifting capacity one half that of the other.

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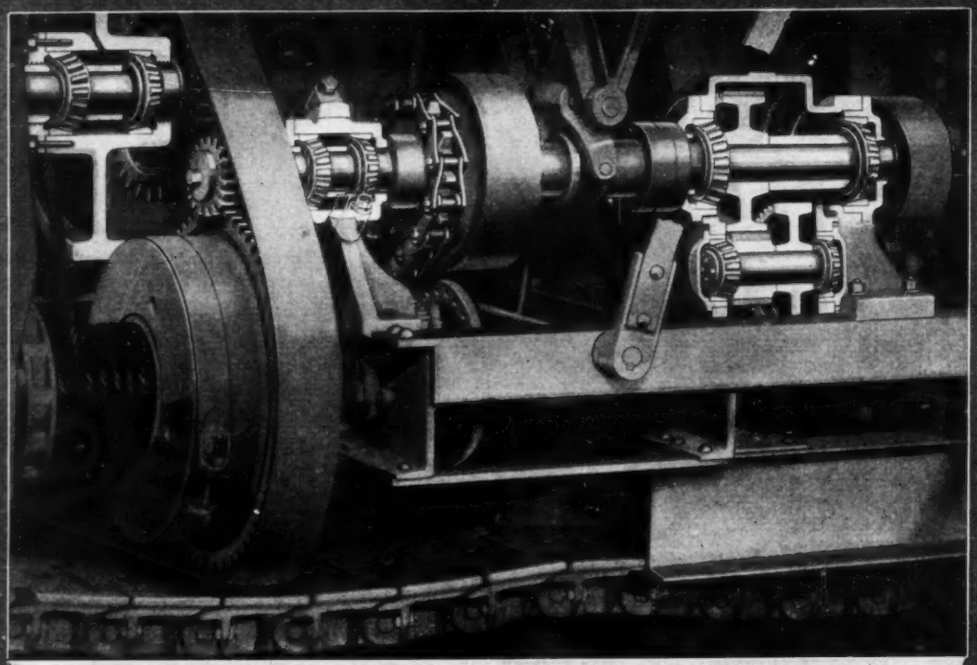
SULKY DERRICKS — WINCHES ALL TYPES



There is no paver as easily cared for! —that means savings and profit

Look over the power assemblies on other pavers
—and then look at the MultiFoote.

You find all the main power assemblies mounted on Timken bearings on two main shafts with parts requiring continuous lubrication encased in oil tight and dust proof housings. These shafts are right together, breast high and unobstructed. That's simplicity and it assures the easy upkeep that means trouble-free operation and longer life—proven results of MultiFoote design.

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World's largest exclusive builders of road pavers

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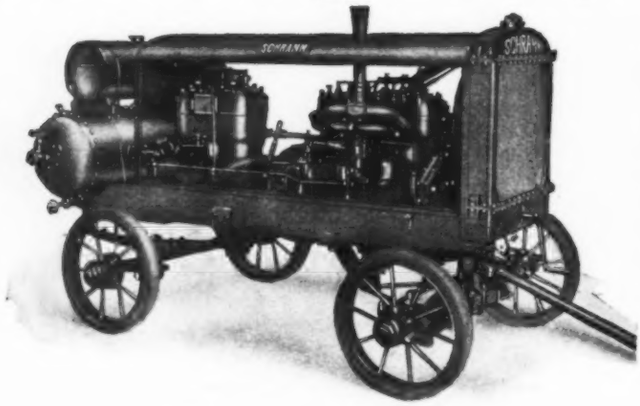
Hard-hitting, two-fisted service!



with Schramm Portable Compressor

Where penalties are posted for failure to meet contract dates, it sure is important to have your equipment up to the minute.

A Schramm Compressor stays on the job and keeps the tools supplied with full pressure at all times. Why?

Buda Engine for one thing!
Fool proof valve action.
Plenty of metal in compressor and air tank.
And a design which packs that tank with power at a saving in fuel.

And again, you can always obtain spare parts from a nearby Schramm depot. There's a Schramm for every type of job and mounting requirement.

Sizes—60, 120, 180 and 240 Cu.Ft. Gas, Electric or belt drive. Truck, Trailer, Skid or Tractor mounted. *Get Catalogue.*

Get the Whole Story.

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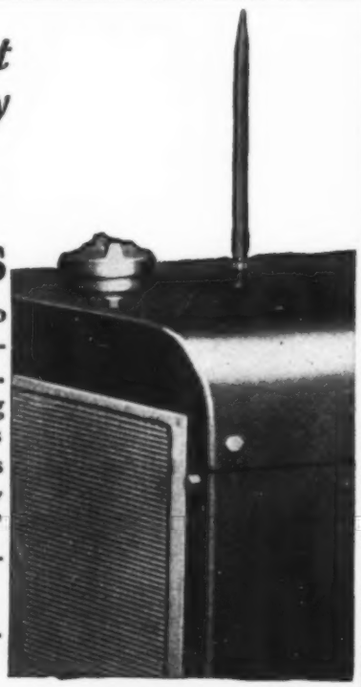
Offices and representatives in all important cities.

Here's what we mean by

vibra-tionless



This 2-cylinder Novo Rollr Engine is running at 1800 r. p. m. The pencil standing on top remains *motionless.* That's what we mean by *"Vibrationless."* Send today for complete details.

NOVO ENGINE CO.
214 Porter Street
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NOVO

THE NEW NOVO ROLLR ENGINES

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Buhl

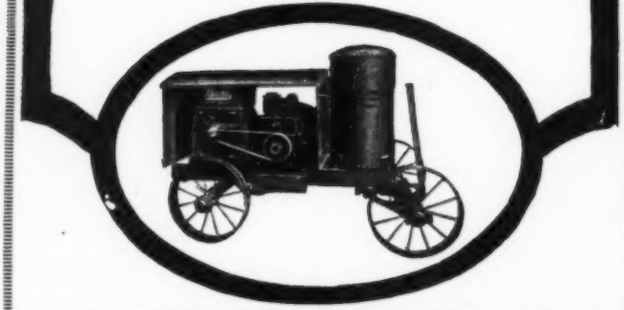
AIR COMPRESSORS

Below is illustrated the BUHL Type C Portable Compressor—one of the many different types of this popular line. Moderate in original cost and low in upkeep.

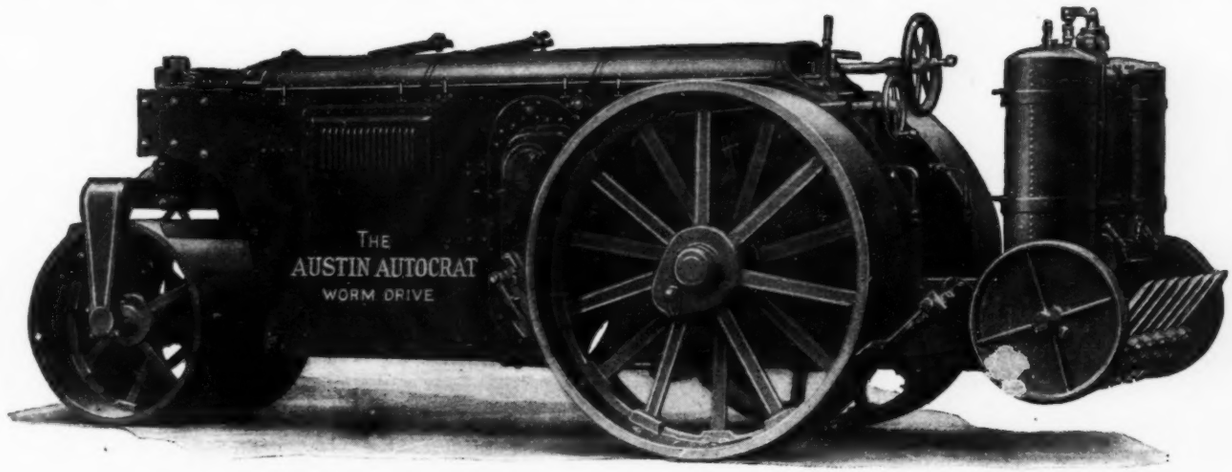
There are six sizes of portable air compressors in the BUHL line to choose from. For operating jack hammers, riveters, clay spades, concrete breakers, etc. The BUHL gives dependable air power at low cost—send for bulletins today.

Sales offices in principal cities

THE BUHL COMPANY
Manufacturers
37 W. Van Buren St., CHICAGO



The New AUSTIN AUTOCRAT

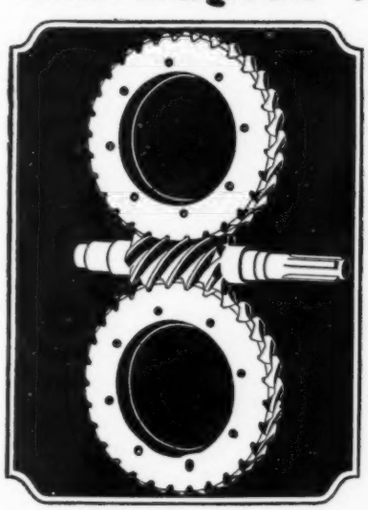


STREAM-LINE—WORM DRIVE

IMMEDIATELY noticeable is the pleasing stream-line design affording the operator unobstructed view of the work of both front and rear rolls. The deep frame side plates, same height front to rear, enclosing power unit and transmission completely, affording a protection from dust, dirt and the elements, as well as against petty thievery of such things as carburetor and magneto.

The outstanding feature of the AUTOCRAT, and the one that places it far in advance of all present motor rollers, is—

The Duplex Worm Gear Drive—



through which the power of the heavy-duty 4-cylinder motor is transmitted to the clutches, thence to the rear axle. New in its application to a road roller, but in almost universal use in the better grade motor trucks. Seven points of superiority:

1. Unexcelled in transmitting power.
2. Permits greater immediate speed reduction.
3. Simplicity.
4. Does not require expert attention.
5. Practically fool proof.
6. Silent in operation.
7. Free from undesirable vibration.

Complete information on this new roller is prepared for mailing. Drop us a line and let us tell you of the amazing possibilities of this great 10-ton roller.

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1907
America's first *3-wheeled motor roller.*

1911
America's first *tandem motor roller.*

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America's first *Pup size roller, and now in*

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America's first *worm drive motor roller.*

Send me the full information on the Austin Autocrat.

Name_____

THE AUSTIN-WESTERN ROAD-MACHINERY-CO. CHICAGO

400 North Michigan Avenue

Moved and Operated by a Single Power Plant

This complete Acme Self-propelled crushing plant is moved to the stone source by the same tractor power plant that crushes stone.

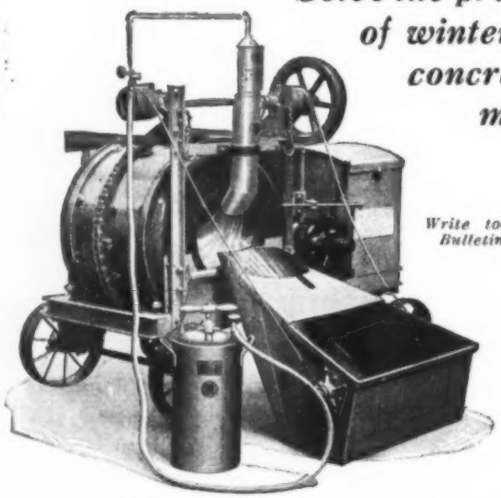
A single shift of the clutch and the entire plant is at the job—on the job.

Write for details. Service warehouses in all principal cities.

Acme Road Machinery Company
Frankfort, N. Y.

LITTLEFORD CONCRETE HEATERS

Solve the problem of winter concrete mixing



Write today for Bulletin C-13

Concrete mixing made easy and convenient in coldest weather. With Littleford Concrete Heaters the mix can be discharged at 75° temperature in zero weather. Made for all makes of mixers, tilting and non-tilting. All ready to attach. Require no additional labor. Bulletin C-13 will bring full details.

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follow you wherever you go.

When you move, let us know promptly, so that you will continue to receive CONSTRUCTION METHODS on the new job. Don't hesitate to ask us to change your address no matter how frequently you move.

Simply send us the following information and we'll do the rest.

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THE ~~SPEED KING~~

$200 PRICE REDUCTION

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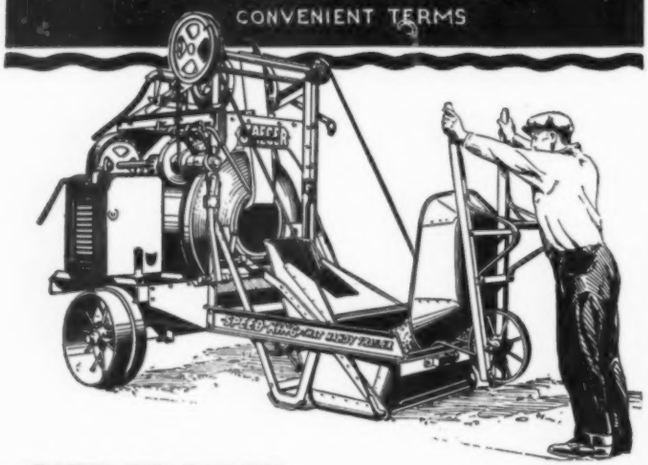

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More Batches Per Day

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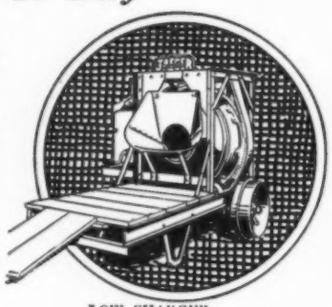
STURDIER—100% Roller bearings—steel construction cuts weight 500 lbs., adds 50% strength. More compact. A full one bag mixer.



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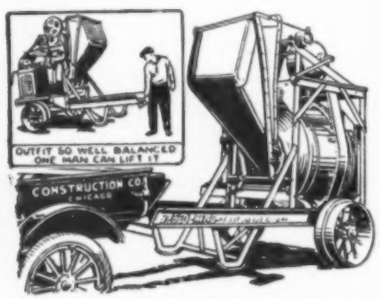

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Past performance gives all equipment its deserved name—good or bad.

To contractors, the name "Carbic" means efficient and dependable, high powered, portable lighting equipment using as fuel, Carbic Cakes, compressed forms of high grade carbide.

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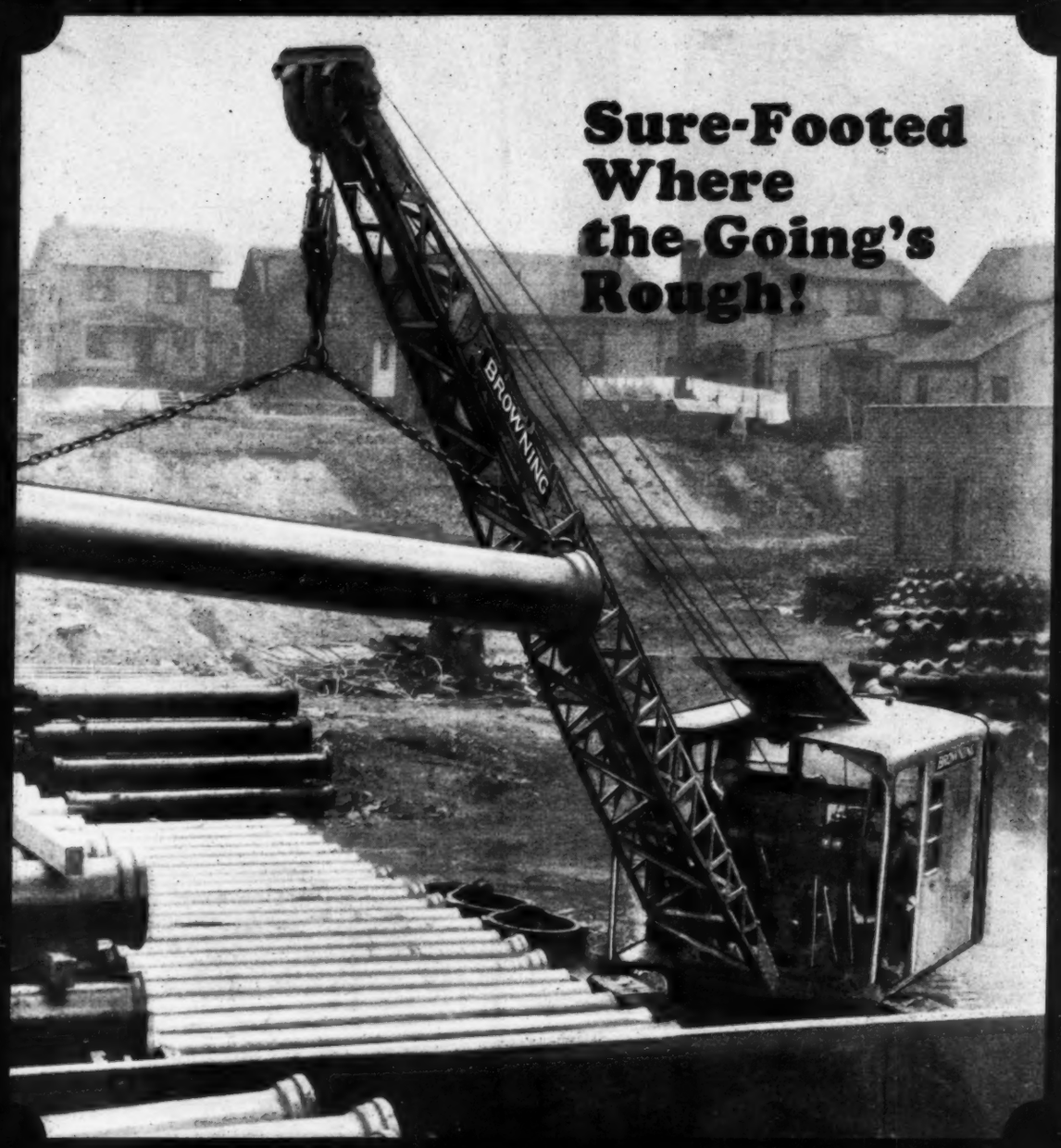

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Sturdy, economical, easy to handle and speedy workers—they are real profit makers on all kinds of material handling work.

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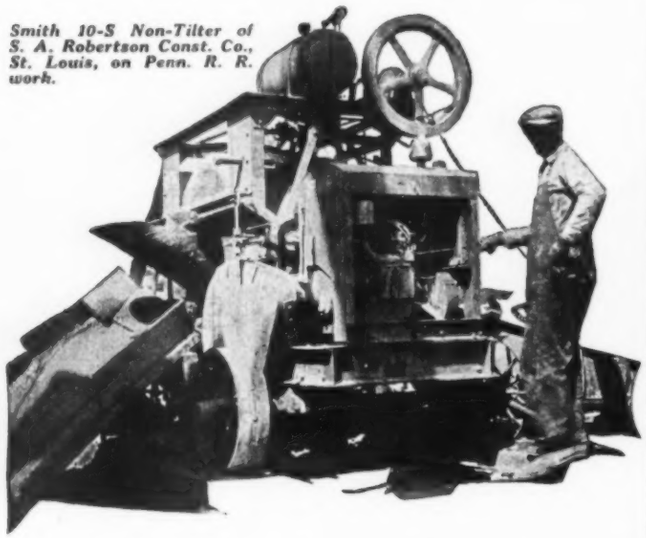
"See The Browning Cranes at the 1928 Convention and Road Show, American Road Builders Ass'n, January 9th-13th inclusive, at Cleveland, Ohio"

For Uniform Concrete—



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a Smith Mixer in Any Size

Getting a consistent strength and "workability" in every batch on a job is made considerably easier with a Smith. If the aggregates are measured with reasonable accuracy, the Smith Water Measuring Tank and smooth end-to-center Mixing Action will take care of the rest.

These features and ruggedness were developed to perfection years ago in Smiths and, in any size from 2½-S up to 112-S, these mixers give *better* concrete and have a longer life.

Catalog No. 526 is not only a presentation of 17 models of quality mixers but is also a manual on the subject of Concrete. We'd like to send it to you—why not dictate a note for it now?

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Two Smith 56-S Tilters mixing the new Catawba Dam of the Southern Power Co.

SMITH MIXERS

Name those things which you want your paver to give you. Check the New Rex 27-E against them. On this buying basis you will buy the Rex—"The Finest, Fastest Paver ever Built." Ask for a catalogue on it.

CHAIN BELT COMPANY, 764 Park Street, Milwaukee

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"THE STANDARD" MIXERS

A mixer to justify its purchase must be a profitable machine for the contractor. It must have speed—it must give a quick thorough mix—it must have long life and it must take, uncomplainingly, the hard knocks.

"The Standard" Mixers are designed and built to give just this kind of service. Before you buy another mixer—Investigate "THE STANDARD"—you'll find it far superior to any other mixer made for the same work.

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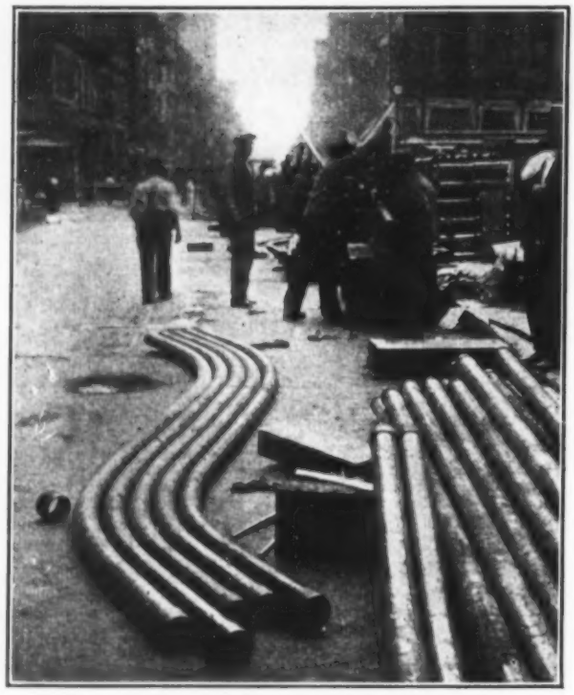

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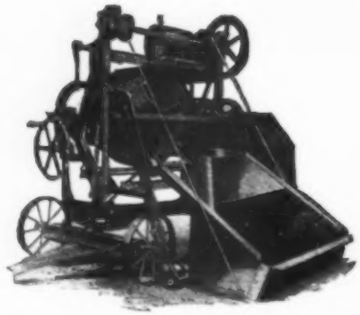

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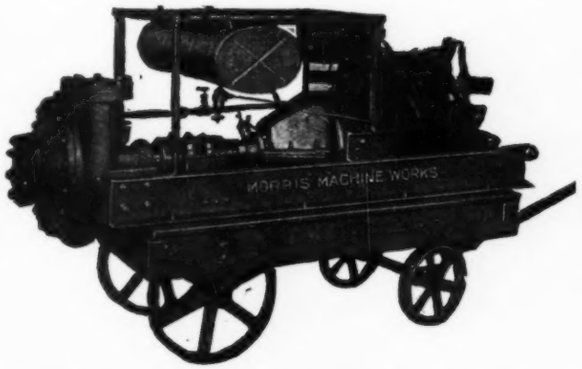

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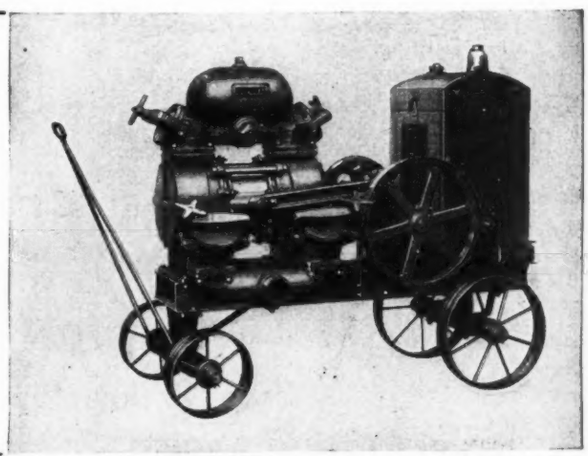

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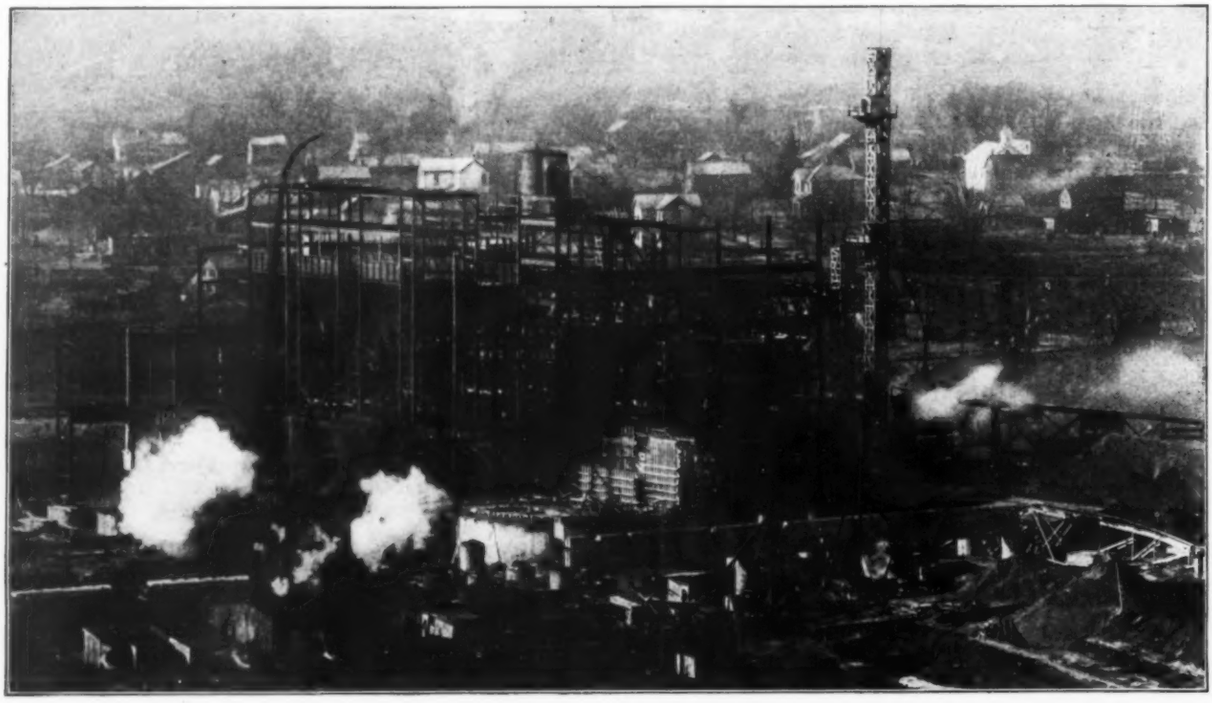

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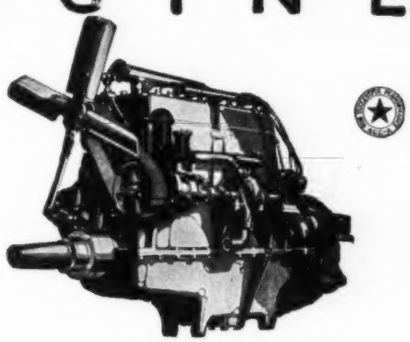

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